

The Mining Journal.

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2516.—Vol. LIII.

LONDON, SATURDAY, NOVEMBER 10, 1883.

WITH SUPPLEMENT. PRICE SIXPENCE BY POST, £1 4s. PER ANNUM

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER AND MINING SHARE DEALER.
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.

BUSINESS negotiated in Stocks and Shares not having a general market value.
Every Friday a general and reliable List issued (a copy of which will be forwarded on application), containing closing prices of the week.
MINES INSPECTED.
BANKERS: CITY BANK, LONDON—SOUTH CORNWALL BANK, ST. AUUSTELL.
TELEPHONE NUMBER 1003.

SPECIAL DEALINGS in the following, or part:—
50 Asia Minor, 12s. 6d.
50 Almaden, 12s. 6d.
50 Almaden, 12s. 6d.
50 Bedford Uni., £1 10s. 6d.
50 Bratsberg, £2 12s. 6d.
50 Bwch United, 3s.
50 Carnarvon Cop., 2s.
50 Carn Camborne, 2s.
50 Callao Bis, 3s. 6d.
50 Chile Gold, 12s. 6d.
50 Chile Gold, 12s. 6d.
50 Consolidated, 2s. 6d.
50 Colorado, 12s. 6d.
50 Canada Copper, 9s. 6d.
50 Chontales, 5s. 6d.
50 Cor. So. Austr. Cop., 7s. 6d.
50 Devala Moyer, 4s. 6d.
50 Devon Con., £2 2s. 6d.
50 Devon Friend., 2s. 9d.
50 Devon United, 10s.
50 Dolcoath, £6 10s. 6d.
50 Don Pedro, 2s.
50 Drakeville, 5s.
50 East Blue Hills, 4s.
50 Eberhardt, 5s. 6d.
50 East Caradon, 7s. 6d.
50 East Craven Moor, 3s.
50 East Lovell, 3s.
50 East Wh. Rose, 9s. 6d.
50 Flagstaff, 2s. 3d.
50 Frongoch, 12s.
50 Frontino, £1 13s.
50 Goginan, 6s. 3d.
50 Gold Coast, 7s. 6d.
50 Grogwinlon, 11s. 6d.
50 Guinea Gold Cat., 4s.
50 Great Laxey, £10 10s.
50 Gunnis, (Clit.), £2 13s.
50 Hingston Down, 4s.
50 Hoover Hill, 3s.
50 Home Mines Trust, 11s. 3d.
50 Hony & Trelawny, 8s. 9d.
50 Indian Consol., 4s. 6d.
50 Indian Glenrock, 2s. 6d.
50 Javali, 2s. 6d.
50 Kapanga, 3s.
50 Killifreth, £1 18s. 6d.
50 Kit Hill, 3s.
50 La Plata, 17s.
50 Last Chance, 2s. 6d.
50 Leadhills, £2 14s. 6d.
50 Marke Valley, 9s. 9d.
50 Mena, 4s.
50 Mounts Bay, 4s. 9d.
50 Myre Gold, 2s. 6d.
50 New Caradon, 4s. 6d.
50 New Callao, 6s. 3d.
50 New Emma, £1 6s. 6d.
50 New Quebrada, £7 17s. 6d.
50 No. Blue Hills, 1s.
50 New Kitty, £1 15s. 6d.
50 Nouv. Monde, 5s. 6d.
50 No Penstruthal, 5s.
50 No W. Caradon, 4s. 3d.
50 Old Shepherds, 9s. 9d.
50 Oroganos, 9s. 9d.
50 Orita, 2s.
50 Polrose, 6s. 3d.
50 Penhall, 5s. 6d.
50 Potosi, 5s. 6d.
50 Port Phillip, 2s. 6d.
50 Parys Copper, 2s. 6d.
50 Phoenix Uni., £2 10s.
50 Panulicillo, £2 3s. 9d.
50 Prince of Wales, 5s.
50 Pestana, 3s.
50 Rio Tinto, £20 10s.
50 Ruby, 23s. 9d.
50 Rhodes Reef, 3s.
50 Richmond, £5 1s. 3d.
50 Roman Grav., £6 10s.
50 South Caradon, 15s.
50 S. Condurow, £2 7s.
50 South Darren, 12s.
50 S. E. Wynad, 2s.
50 So. Devon Uni., 8s. 9d.
50 Sortridge, 2s.
50 South Peistru, 9s. 6d.
50 Tambracherry, 6s.
50 Tanker, Gt. Con., 2s.
50 Trevaunance, 7s. 6d.
50 Unl. Mexican, £5 8s. 9d.
50 Victoria Gold, 14s. 6d.
50 Van, £4 10s.
50 W. Basset, £2 10s. 6d.
50 West Callao, 11s.
50 West Phoenix, 8s. 9d.
50 West Caradon, 7s. 6d.
50 West Crebhor, 5s. 6d.
50 West Polbreon, £1.
50 West Kitty, 10s.
50 West Poldice, 5s.
50 Wheal Coates, 5s.
50 Wheal Crebhor, £2 11s. 3d.
50 Wheal Jane, 2s.
50 Wheal Jewell, 2s.
50 Wheal Kitty, 25s.
50 Wheal Silver & Lanteglos, 2s. 3d.
50 Wynad Persev., 2s. 3d.

RAILWAYS — SPECIAL BUSINESS.—Fortnightly Accounts opened on receipt of the usual cover.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

FOREIGN BONDS — SPECIAL BUSINESS.—Fortnightly Accounts opened on receipt of the usual cover.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

AMERICAN AND CANADIAN STOCKS AND SHARES — SPECIAL BUSINESS.
Fortnightly Accounts opened on receipt of the usual cover.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

GOLD AND SILVER MINES.—SPECIAL BUSINESS in ALL marketable INDIAN GOLD SHARES, and in California, Callao "Bis," Gold Coast, Guinea Gold Coast, New Callao, West Callao, Tolima, La Plata, Rio Tinto, Frontino and Bolivia, Potosi, Chile, Nouveau Monde, Ruby, Richmond, Victoria.

MISCELLANEOUS SHARES of all DESCRIPTIONS BOUGHT or SOLD—SPECIAL BUSINESS:—Brighton Aquarium, General Credit, Hudson's Bay, Native Guano, Suez Canal, Westminster Aquarium, and Hotel Shares.
Shares sold for forward delivery, ONE, TWO, or THREE MONTHS, on DEPOSIT OF TWENTY PER CENT.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

ELECTRIC LIGHT SHARES — SPECIAL BUSINESS.
Shares sold for cash, account, or for forward delivery (one, two, or three months) on deposit of 20 per cent.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

EAST WHEAL ROSE, OLD SHEPHERDS, MOUNTS BAY, TRESAVERN, HOME MINES TRUST.
SPECIAL BUSINESS in the above for cash or account.
For SPECIAL SALE, for FORWARD DELIVERY, ONE, TWO, or THREE MONTHS, subject to deposit of TWENTY PER CENT.—100 East Wheal Rose, 10s.; 100 Mounts Bay, 5s.; 100 Old Shepherds, 10s.; 100 Trevaunance, 7s. 6d.; 100 Home Mines Trust, 11s. 6d.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.
ESTABLISHED 1842.

MR. W. H. BUMPUS, STOCK AND SHARE BROKER, AND MINING SHARE DEALER.
44, THREADNEEDLE STREET, LONDON, E.C.
ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES and MISCELLANEOUS SHARES of every description.
RAILWAYS, BANKS, FOREIGN and COLONIAL BONDS, TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.
Accounts opened for the Fortnightly Settlement.

A List of Investments free on application.
Mr. BUMPUS has SPECIAL BUSINESS in the undermentioned:—
50 Almaden, 11s.
50 Bratsberg, £1 10s.
50 Carn Camborne, 2s.
50 Copalpo, £2 10s.
50 Chile Gold, 12s. 6d.
50 Callao Bis, 3s. 6d.
50 Colombian, 7s.
50 California Gold, 13s.
50 Colorado, £2 2s. 6d.
50 Devon Consols, £2 10s.
50 Devon Friendship, 2s. 9d.
50 Dolcoath, 2s. 9d.
50 Emma, 27s. 6d.
50 Frontino, £1 12s. 6d.
50 Great Laxey, 15s.
50 Gold Coast, 7s. 6d.
100 Indian Phoenix, 7s. 6d.
50 Kolninoor B, 8s. 9d.
100 La Plata, 18s.
25 Leadhills, £2 10s.
25 Mena, 4s.
150 Nouveau Monde, 4s. 6d.
50 New Kitty, 30s. 6d.
50 New Trumpet Con., 21s.
50 Oroganos, 9s.
50 Orita, 2s.
50 Prince of Wales, 5s.
100 Potosi, 5s. 6d.
20 Panulicillo, £2 7s. 6d.
75 Pen-yr-Oreidd, 15s.
150 Pestana, 15s.
100 Port Phillip, 2s. 6d.
70 Ruby, £1 4s.
15 Richmond, £5 10s.
20 Roman Gravels, 2s.
50 South Caradon (Lim.), 15s.
150 Sortridge, 3s. 9d.
30 South Devon, 9s. 9d.
25 Trevaunance, £2 10s.
200 Tankerville, 3s. 3d.
15 United Mexican, £5.
10 Van, 10s.
50 West Jewell, 2s.
50 West Polbreon, 20s.
100 Wheal Coates, 5s. 6d.
15 Wheal Grenville, £2 10s.
50 Wheal Godolphin, 20s.
10 West Kitty, £1 10s.
50 Wheal Crebhor, £2 10s.

Where prices are not inserted offers may be made.
SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.
Mr. BUMPUS devotes special attention to these Securities, and is in a position to afford reliable information and advice to intending investors and others.
WILLIAM HENRY BUMPUS, SWORN BROKER,
OFFICES: 44, THREADNEEDLE STREET, LONDON, E.C.
ESTABLISHED 1867.

BRITISH AND FOREIGN MINING OFFICES.

Messrs. PETER WATSON AND CO.,
16, AUSTIN PRIARS,
OLD BROAD STREET, LONDON, E.C.
BANKERS: THE ALLIANCE BANK (Limited).

MESSRS. PETER WATSON AND CO.'S
BRITISH AND FOREIGN MONTHLY MINING NEWS
—STOCK AND SHARE INVESTMENT NOTES—MINES,
MINERALS, AND METAL MARKETS—SHARE LIST,
No. 859, Vol. XVII., for NOVEMBER month, is now ready,
and will be sent to customers on application.
Annual Subscription..... 5s. | Single Copy..... 6d.

MR. ALFRED E. COOKE,
DEALER IN BRITISH AND FOREIGN STOCKS AND SHARES
of EVERY DESCRIPTION.
(From 76, OLD BROAD STREET)
ESTABLISHED 1853.
9, OLD BROAD STREET, LONDON.

MINE SHARES FOR SALE.
Mr. ALFRED E. COOKE can SELL the following lots (or any smaller number of shares) to immediate applicants at prices annexed, free of commission:—

Where prices are not inserted, the market price of the day will be taken, or offers may be made:—
10 Bratsberg Cop., £2 10s.
30 Callao Bis Gold, 7s.
25 Colombian Hydraulic Gold, 6s. 3d.
20 Carn Camborne Tin & Copper, 4s. 6d.
20 California Gold, 15s.
50 Chontales Gold, 5s. 3d.
50 Drakeville Tin and Copper, 4s. 6d.
40 Devon Friend., 2s.
50 East Rose Lead, 10s. 3d.
35 E. Blue Hills Tin, 4s. 6d.
30 Eberhardt Silver, 5s. 3d.
10 Frongoch Lead.
2 Goginan Lead.
20 Grogwinlon Ld., 12s.
40 Home Mines Trust, 10s. 9d.
100 Herodasfoot.
50 La Plata Lead, 17s. 9d.
30 Leadhills, £2 10s.
30 Mounts Bay, 5s.
5 New Kitty Tin.
50 New West Caradon Copper, 5s.
40 New Caradon Copper, 5s. 9d.
25 Nouveau Monde Gold, 5s. 3d.
40 North Blue Hills, 1s. 6d.
60 North Grogwinlon Lead, 3s. 9d.
30 Old Shepherds, 10s.
25 Oroganos.
20 Orita Gold, 13s.
40 Prince of Wales.
50 Potosi Gold, 6s.
50 Port Phillip Gold.
40 Parys Copper, 2s. 6d.
10 Richmond Sil., £5 7s. 6d.
25 Ruby, £1 10s.
10 Roman Gravels Lead, £5 10s.
25 Sortridge Copper and Tin.
20 South Darren Silver-lead, 12s.
30 South Caradon Copper.
20 So. Penstruthal Cop.
50 Tanker, Gt. Con., 1s. 9d.
25 Trevaunance Copper & Tin, 7s. 6d.
25 Victoria Gold.
40 W. Caradon Cop., 6s. 9d.
20 West Polbreon Tin.
30 West Gonamena Cop., 4s.
10 W. Kitty Tin, £13 10s.
40 Wheal Jane Tin.
20 Wheal Crebhor Copper, £2 10s.
20 Wh. Coates Tin, 5s. 6d.
50 West Crebhor Copper, 5s. 3d.

TEN PER CENT. DEPOSIT.—Many of the above shares can be sold to settlement by arrangement at the end of December on payment of 10 per cent deposit. Shares not found in the above list may be purchased on application.
SOUTH KITTY (ST. AGNES).—Shares in this mine are likely to rise 200 to 300 per cent. The present price is only 10s. to 15s. No cheaper speculation has been offered for a long time. Mr. ALFRED E. COOKE can supply FIVE HUNDRED SHARES or any part to early applicants at 12s. per share.
PROFITS 3 PER CENT. TO 200 PER CENT.—Read the November issue of the INVESTORS' GAZETTE. Post free three stamps.

PRICES of every description of STOCKS and SHARES are received continuously throughout the day by TELEGRAPH from the STOCK EXCHANGE. TELEPHONE NUMBER, 1268.
ALFRED E. COOKE, 9, OLD BROAD STREET, LONDON.
(Opposite the Stock Exchange, with which the offices are in DIRECT TELEGRAPHIC COMMUNICATION.)

MR. JAMES STOCKER, STOCKBROKER,
2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.
Has special business in the following for cash or settlement by arrangement:—
Asia Minor, 12s. 6d.
Belt Copper, £3 10s.
Bratsberg, £2 11s.
California, 13s.
Callao Bis, 3s. 6d.
Carn Camborne, 17s.
Chile Gold, 13s.
Chontales, 4s. 9d.
Clitters, 35s. 6d.
Colombian, 6s.
Colorado, £2 1s.
Cullacomb, 10s.
Devon Friendship, 3s.
Eberhardt, 5s.
East Blue Hills, 4s.
Home Mines, 10s.
Indian Consolids., 3s. 3d.
Isabelle, 9s.
La Plata, 15s.
Leadhills, £2 10s.
Mounts Bay, 4s. 9d.
Montana, 41s.
New Callao, 4s.
New Emma, 23s. 6d.
Nouveau Monde, 4s. 6d.
Old Shepherds, 10s.
Orita, 2s.
Oroganos, 9s.
Prince of Wales, 8s. 6d.
Potosi, 4s.
Parys Copper, 2s. 6d.
Richmond.
Ruby, 23s. 9d.
Sortridge, 1s. 9d.
South Caradon, 10s.
South Devon, 10s.
Trevaunance, 7s.
Tolima, 4s.
Victoria Gold, 13s. 9d.
West Caradon, 6s. 3d.
West Crebhor, 5s.
West Kitty, £13 10s.
BANKERS: LONDON AND WESTMINSTER.

JOHN B. REYNOLDS, STOCK AND SHARE DEALER,
37, WALBROOK, LONDON, E.C.
Established Twenty-five Years.
BANKERS: LONDON JOINT-STOCK.
Mr. REYNOLDS's remarks will be found on page 1233.

NEW SERIES—DESIRABLE INVESTMENTS.
JOHN LENN AND CO. (LIMITED),
5, GROCERS' HALL COURT, LONDON, E.C.
Are issuing a NEW SERIES of CIRCULARS, giving particulars of most DESIRABLE INVESTMENTS.
Should be read by every investor. Post free on application.
SPECIAL BUSINESS in EAST ROSE and OLD SHEPHERDS Mines shares.

MESSRS. ENDEAN AND CO., STOCK AND SHARE DEALERS,
85, GRACECHURCH STREET, LONDON, E.C.
ESTABLISHED 1861.
BANKERS: LONDON AND WESTMINSTER, Lothbury, E.C.

JOHN RISLEY, STOCK AND SHARE BROKER, AND MINING SHARE DEALER,
38, CORNHILL, LONDON, E.C.
ESTABLISHED 1860.
BANKERS: LONDON AND WESTMINSTER, Lothbury, E.C.

MR. ALEXANDER DAVIDSON,
STOCK AND SHARE DEALER,
LEADENHALL HOUSE, 101, LEADENHALL STREET, LONDON, E.C.

MR. W. B. COBB, 29, BISHOPSGATE STREET,
LONDON, E.C.
PAYING 10 AND 20 PER CENT. CERTAIN.
Immense profits and large dividends. See Circular, price 1s.
Speculative business opened in Mexican Rails and all leading Stocks of the day.

MESSRS. PENNINGTON AND CO., SWORN BROKERS AND SHARE DEALERS,
13, MOORGATE STREET, LONDON, E.C.
Have FOR SALE the undermentioned or part on advantageous terms. Prices on application:—

25 Bratsberg.
30 Carn Camborne.
50 Corporation of South Australian Copper.
100 East Wh. Rose, 9s.
7 Great Laxey.
75 Home Mines Trust.
25 Leadhills.
50 Old Shepherds.
100 Parys Copper.
50 Ruby.
10 Roman Gravels.
15 Richmond.
50 Sierra Buttes.
25 So. Plumas Eureka.
25 United Mexican.
40 Wheal Crebhor.
30 Wheal Kitty.
25 Bratsberg.
30 Carn Camborne.
50 Corporation of South Australian Copper.
100 East Wh. Rose, 9s.
7 Great Laxey.

BUSINESS in all DESCRIPTIONS of STOCKS, MINING and other SHARES.
ESTABLISHED 1869—BANKERS: ALLIANCE (Limited).

FERDINAND R. KIRK, STOCKBROKER,
5, BIRCHIN LANE, LONDON, E.C.

Fortnightly Accounts opened in all Stock Exchange Securities on receipt of the usual cover.
SPECIAL BUSINESS in the following or any part:—
60 Almaden, 12s. 6d.
50 Bratsberg, £2 10s.
50 California Gold, 14s. 6d.
50 Callao Bis, 3s. 6d.
50 Carn Camborne, 20s.
50 Chile Gold, 14s. 3d.
50 Chontales, 5s.
100 Colombian Hyd., 6s. 6d.
50 Devon United, 11s.
50 East Wh. Rose, 10s.
100 Eberhardt, 4s. 3d.
40 Frongoch, 12s. 6d.
60 Goginan, 7s.
20 Great Laxey, £10 10s.
50 Home Mines Trust, 11s.
100 Indian Consol., 4s.
40 Leadhills, £2 11s. 3d.
90 Mounts Bay, 4s. 9d.
50 Nouveau Monde, 4s.
40 Oroganos.
60 Orita, 14s.
70 Old Shepherds, 11s.
60 Parys Copper, 3s.
100 Potosi, 6s.
40 Prince of Wales, 8s.
50 Tamar.
80 Trevaunance, 5s.
60 Victoria Gold, 13s.
50 West Crebhor, 5s. 9d.
40 Wheal Crebhor, £2 10s.
BANKERS: LONDON AND WESTMINSTER, Lothbury.

THE "DIFFERENTIAL" PUMPING ENGINE
(DAVEY'S PATENT),
FOR
DRAINING MINES, WATER SUPPLY OF TOWNS, IRRIGATION,
SUPPLYING DOCKS, PUMPING SEWAGE, AND GENERAL
PUMPING PURPOSES.

HATHORN, DAVEY, AND CO.,
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HATHORN, DAVEY, and Co. have Patterns of "Differential" Engines of all sizes, from 5 to 500-horse power, and have facilities for supplying very powerful Engines and Pumps at a short notice.

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MINING AGENT, STOCK AND SHARE DEALER,
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MR. ALFRED THOMAS,
MINING ENGINEER, AND STOCK AND SHARE DEALER,
10, COLEMAN STREET, LONDON, E.C.

Now ready, post free, One Shilling.
SPARE CASH: WHAT SHALL I DO WITH IT?—A New Work
for the Guidance of Investors.
Published by ALFRED THOMAS, M.E., 10, Coleman-street, London, E.C.
"Invaluable to those who cannot attend the markets."

ESTABLISHED 1853.
MR. HENRY J. TALLENTIRE
has BUSINESS in all MINING SHARES for cash or payment one or two months on.

SOUTH PHENIX AND CARADON (Limited) specially recommended.
Full particulars and reports upon application.
OFFICES:—21, THREADNEEDLE STREET, LONDON, E.C.
BANKERS: CITY BANK, Threadneedle-street.

MR. E. J. BARTLETT, STOCK AND SHARE DEALER,
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Selected List of Investments post free on application.
Eighteenth Edition, now ready—"HOW TO INVEST"—post free 12 stamps.

ABBOTT, PAGE, NEIL, AND CO.,
STOCKBROKERS,
42, POULTRY, LONDON, E.C.

W. WISDOM AND CO., STOCK AND SHARE DEALERS,
SHARE EXCHANGE OFFICES,
110, CANNON STREET, LONDON, E.C.

Business transacted in all classes of Securities. Selected List of Shares for immediate investment on application.

MR. J. GRANT MACLEAN,
SHAREBROKER AND IRONBROKER, STIRLING, N.B.
Refers to his Share Market Report on page 1183 of to-day's Journal.

GABBOTT AND CO., STOCK AND SHARE DEALERS,
110, LONDON WALL, E.C.

ESTABLISHED 1865. THIRTEEN YEARS IN CORNWALL.
SAMUEL JAMES, STOCK BROKER AND MINING SHARE DEALER,
14, ANGEL COURT, LONDON, E.C.
Member of the Redruth Mining Exchange.

Those who wish to buy or sell mining shares should consult Mr. JAMES. Mr. J. devotes his entire attention to home and foreign mines, and places his special information at the disposal of his clients. That mining offers undoubted advantages for quick returns no one can deny. Look at the enormous sums of money paid in dividends by home and foreign mines. A large number of wealthy families owe their present positions to adventuring in LEGITIMATE MINES. With a better price for metals many of the smaller priced shares would immediately advance so no hundreds per cent. Mines inspected and reported upon by thoroughly competent agents.

There are many mines worth attention, as proceedings of recent shareholders' meetings prove beyond doubt. During the last 40 years there has no such opportunity presented itself as the present for investment in British mines. Metals are certain to advance. In well-informed circles no doubt is entertained on this point. Buyers must not further delay orders.
See selected List published by S. JAMES, 14, Angel-court, London, E.C.

SPECIAL BUSINESS in the following or part:—
20 Bedford United 28s. 9d.
25 Blue Hills, 7s. 6d.
10 Carn Camborne, 17s. 6d.
10 Carn Brea, £3 10s.
5 Cook's Kitchen, £15.
50 Cullacomb Cons., 10s.
100 Othedral, 12s. 6d.
200 D'Eresby Mount, 7s. 3d.
25 Devon Consols, £2 5s.
50 Devon Friendship, 3s.
25 Devon United, 10s. 6d.
5 Drakeville, 5s. 6d.
5 Dolcoath, £2 10s.
50 East Blue Hills, 4s.
5 East Botallack, 16s.
100 East Caradon, 7s. 3d.
50 East Wheal Rose, 9s. 6d.
100 Frongoch, 11s. 9d.
100 Goginan, 6s. 6d.
10 Great Laxey, £12.
25 Gunnislake Clitters, £2 1s. 3d.
15 Great Laxey, £2 10s.
55 Grogwinlon 8s.
45 Herodasfoot, 7s. 6d. p.
100 Home Mines Trust, 11s.
25 Killifreth, 3s.
25 Kit Hill Gt. Con., 2s. 6d.
16 Kitty St. Agnes, 20s.
50 Langford, 2s. 6d.
10 Marke Valley, 8s. 6d.
30 Mounts Bay Con., 5s.
10 New Kitty, 37s.
40 North Bury, 4s. 3d.
30 New Caradon, 4s. 3d.
100 North Penstruthal, 5s.
50 Old Shepherds, 10s.
10 Phoenix Uni., 29s. 6d.
20 Potosi, 5s. 6d.
25 Prince of Wales, 8s. 6d.
50 Parys Copper, 2s. 6d.
50 Sortridge, 1s. 9d.
20 So. Caradon, 1s. 9d.
20 S. Condurow, £2 10s.
15 South Darren, 12s.
50 So. Devon Utd., 10s. 6d.
10 South Frances, £7 10s.
100 So. Penstruthal, 15s.
5 Tincroft, £2 15s.
35 Trevaunance, 7s.
100 Tanker, Gt. Con., 2s.
25 Trevaunance, £2 1s. 3d.
5 West Basset, £2 10s.
100 West Caradon, 3s. 9d.
50 West Crebhor, 5s. 6d.
25 W. Devon Gt. Con., 2s. 6d.
30 West Gonamena, 4s.
10 West Kitty, £13 6s. 3d.
20 Wheal Basset, £2 10s.
20 Wheal Coates, 7s. 6d.
20 Wheal Crebhor, £2 10s.
5 Wheal Feeder, £2 10s.
20 Wheal Sisters, 14s.
40 Wheal Jane, 8s. 6d.
60 Asia Minor, 11s. 6d.
27 Wynad Persev., 2s.
21 Almaden & Tirlita, 10s. 6d.
20 Bratsberg, £2 10s.
20 California Gold, 14s.
20 Canadian Cop., 10s.
50 Callao Bis, 3s. 6d.
50 Chile, 13s.
100 Chontales, 5s.
100 Colombian Hyd., 6s. 6d.
50 Co. So. Austr. Cop.
20 Don Pedro, 2s.
20 Eberhardt, 5s.
30 Flagstaff District, 2s. 6d.
20 Frontino, 33s.
50 Gold Coast, 7s. 6d.
50 Hoover Hill, 3s. 9d.
100 Indian Glenrock, 2s. 6d.
20 La Plata, 17s. 6d.
20 New Emma, 31s.
50 Nouveau Monde, 4s. 9d.
10 Oroganos.
120 Orita, 15s.
120 Potosi, 6s.
120 Port Phillip, 1s. 9d.
50 So. E. Austr. Cop.
50 Tamar.
50 Toconilla, 7s. 6d.
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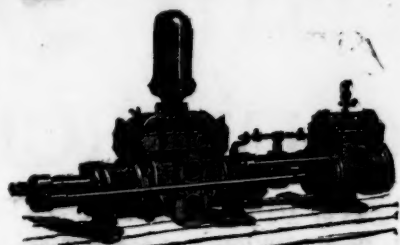
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HORIZONTAL DOUBLE PLUNGER PUMP,
Suitable for Gritty Water.



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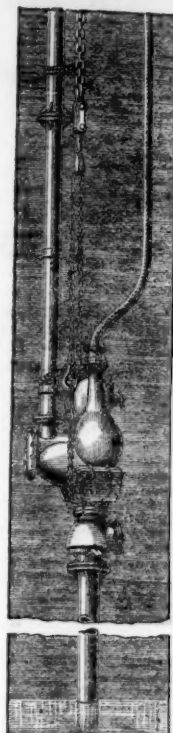
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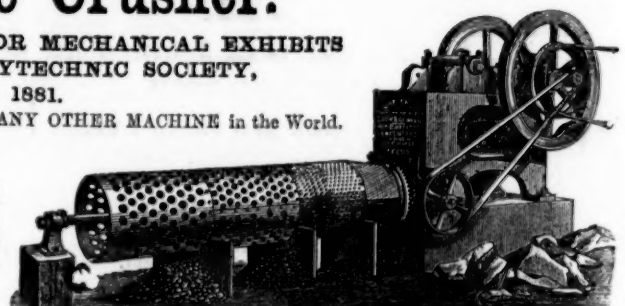
To Mr. Baxter, Leeds.

Cinderford, Feb. 13, 1883.

DEAR SIR,—I am pleased to be able to tell you that the Machine works splendidly. We are breaking 16 trucks a day now, and we thought it a good day's work to do 10 a day with the old Machine, so you can see the difference. I had a gentleman looking at it yesterday, and he was surprised to see it work so easily.

Yours truly, E. ORGAN.

The above refers to one of our 16 by 9 Machines we supplied to replace an "Improved Blake" 15 by 9 Machine.



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8TH OF SEPTEMBER, 1882.

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FOR MINING, TUNNELLING, SUBMARINE, AND ALL KINDS OF BLASTING OPERATIONS.

THE EXPLOSIVES COMPANY (LIMITED),
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Meetings of Public Companies.

NACUPAI GOLD MINING COMPANY.

The first ordinary general meeting of shareholders was held at the offices of the company, Queen-street-place, on Tuesday, Mr. E. A. MAVROGORDATO in the chair.

Mr. JOHN GARLAND (the secretary) read the notice convening the meeting.

The CHAIRMAN said:—The present meeting is held in pursuance of the provisions of the Companies Acts, which require that a statement should be made at the first opportunity to the shareholders as to the constitution of the company. With us it is a mere matter of form, as the company has issued none of the shares to the public; but the original proprietors of the Nacupai properties formed the new company, and transferred the properties to it in the form of a sale, but virtually receiving nothing from it but its shares in payment; the small amount of cash payment being merely the adjustment of cash items—the cash items transferred to the new company are equivalent to the cash balance claimed. The capital, as you are aware, consists of 603,000, of which 100,000 are 8 per cent. preference shares, 500,000 ordinary shares, and 3000 foundry shares. Of this capital there have been issued to the vendors 70,000 preference shares, 290,000 ordinary shares, and 2000 foundry shares, and to the Nacupai Mining Company, in virtue of their participation to one-third of the profits, as an equivalent to their cash contribution to the purchase of the mines, there have been issued 150,000 ordinary shares and 1000 foundry shares. The balance of 60,000 ordinary shares, and 30,000 preference shares are reserved by the company for future issue. The properties, as you are aware, consist of 10 concessions situated in the well-known auriferous district of Nueva Providencia, in Venezuela. They were originally conceded to Mr. Austin, United States Consul at the time. One of the concessions—the No. 1—has been worked by our predecessors, the Orinoco Company, and they extracted from it 100,000 oz. of free gold. This company had extensive undertakings in hand which do not appear to have answered so well as this, and it had gone into liquidation. Our vendors bought the Nacupai property from their assignees through the court, and received regular titles, which are now in course of transfer to the new company by registration in Venezuela. Of the 10 concessions, only one is at present at work. The present shaft is 220 ft. deep, with galleries of 200 ft. east and west. The mine is fully equipped with storehouses, valuable machinery, steam-power, and a mill of 50 stamps, also a good dwelling-house. The River Yurua traverses our property, a most valuable appendage in a country where the want of water causes vast inconvenience and expense to other mining enterprises not so fortunately circumstanced in regard to this important element. You can understand, gentlemen, that in a country so distant, and where transport is so difficult and expensive, what an immense advantage it is to have acquired this mine fully equipped with machinery, which would have cost us 100,000 to erect. It is scarcely necessary to inform you of the good opinion entertained about the richness of the mine which we are working, for this opinion is universal. When the vendors took possession they had to take the water out, and the examination made on the spot confirmed in every respect the favourable opinion originally formed, not only by our own officers, but such independent judges as the chief manager and the mining captain of the Callao Company. The opinion expressed by these two latter gentlemen, Mr. Oxlund and Mr. Penberth, is that the Nacupai will prove only second to the Callao, to which it is continuous. What we have to do is to deepen the shaft and develop the galleries so as to get sufficient ore for our mill, whose capacity is from 300 to 350 tons per week. The ore at present level is expected to give from 2 to 2½ oz. of gold per ton, but, as is well known, the ore is getting richer and richer in depth. Taking the ore at the present level, and an output of about 200 tons, we shall have from the present shaft over 18,000 tons of ore and 36,000 oz. of gold per annum. I said that our properties consist of 10 concessions, and I have to state that all the other nine concessions are equally favourably reported upon, and we shall have to deal with them later on as circumstances will dictate. Of these concessions there is one known as No. 9, the richness of which has been indirectly proved by results. On this matter I have to make a statement to the meeting, which I do with great regret, as what I am going to state affects deeply the conduct of a sister English mining company—the Chile Company. The manager of the mines of this company in Venezuela, Mr. Nicholson, which mines are continuous with our No. 9 concession, attracted, no doubt, by its extreme richness, has invaded this property of ours in a most improper and unjustifiable manner by working their tunnels underground into our property and extracting the ore therefrom. The Chile Company are producing at the rate of 3000 oz. of gold per month. Their actual production for the first nine months of this year is over 25,000 oz. of gold, and it is the universal opinion in the district that they are getting the bulk of this gold out of our said property, and we ourselves have no doubt whatever about it. In fact, I could refer you to their last report, in which they go a great way to admit it, and we have been compelled to commence an action at law against that company to eject them, and recover adequate damages for these illegal proceedings. At their last meeting, held on May 17 last, the Chairman of the Chile Company, Mr. Harvey, mentioned that they had acquired a very valuable property, and congratulated the shareholders upon this fact, but he said not a word that the owners of the property had commenced an action against them for its recovery. Upon this we requested our managers, Messrs. John Taylor and Sons, to write a letter to the papers challenging the statements of Mr. Harvey. I am going to read you this letter which appeared in the *Mining Journal* of May 28 last, and is as follows:—

The attention of the proprietors of the Nacupai Mine has been called to the report in your issue of the 19th inst., of the general meeting of shareholders of the above company, held at the City Terminus Hotel on Thursday last, when Mr. John Harvey, the Chairman, is reported to have made the following remarks:—"During the past year the board in the interest of the company considered it advisable to obtain an adjoining property called 'Austin No. 9' that bounds our property to the north, and although possibly not of much value to any other company or owner on account of the absence of water, and the small area, it was of importance to us, as it enabled us to commence the additional shaft necessary for working our property to advantage on the lode instead of sinking shafts through hard and unproductive ground. I hope that the extension of our property will prove remunerative and valuable to this company." With reference to the alleged purchase of Concession No. 9, we are instructed to inform you that a correspondence has recently taken place between us on behalf of the Nacupai proprietors and the directors of the Chile Company, by which we informed the directors of the Chile Company that the property was registered in the names of the Nacupai proprietors, and stood registered in their names at Bolivar; also, that the title had been approved by the most eminent advocate at Bolivar, and that the deed of the transfer had been duly registered with all the formalities required by Venezuelan law, and we warned the company against allowing their manager, Mr. Nicholson, to negotiate for the purchase of the said concession. We submit that, after the warning that the Chile directors received from us, and in the face of the legal proceedings now pending, they ought not to have put the matter as they did at the meeting without even alluding to the correspondence above referred to.—JOHN TAYLOR AND SONS.

You will be surprised or rather not surprised, that the directors of the Chile Company did not venture to meet the charge made against them; they have not vouchsafed any reply to it. Our case is not a singular one, however, for another English company in Venezuela, the Potosi, have begun an action against the same Chile Company, for invading their property, and we understand that the Potosi Company have just received intelligence to the effect that the suit has been settled in their favour. Such a statement of other people's rights have formed the subject of severe comment in the district, where it was an unheard-of thing previous to these occurrences to hear of any infringement of neighbours' rights even by the natives themselves, and the example given to them by an English company is most pernicious. Fortunately the conduct of the Government has been irreproachable, and all that good faith in the performance of their contracts would dictate. They feel that the prosperity of the mining industry depends upon such a liberal policy, and avoid harassing the enterprises, which at great labour and risk attempt to develop the vast mining resources of this exceptionally rich gold district. To return to our case against the Chile Company, and to give you some idea of the opinion formed by the local courts, their manager, Mr. Nicholson, has been prohibited from leaving the country, pending the trial of the action, and has been refused by the court. I hold in my hand the translation of a decree issued by the Finance Minister declaring null and void the concession to the Guayana Company of the so-called lapsed mines, upon which Mr. Nicholson pretended to base his unwarrantable proceedings. The decree is as follows:—

United States of Venezuela, Ministry of Finance, Direction of Territorial Wealth, Caracas, June 30, 1883, Year 20 of the Constitution, and 25th of the Federation.—"However general the terms of a contract may be, the concession of mines in action, in virtue of anterior Acts, do not accrue to that contract in case they are formally declared forfeited. They then revert to their previous condition of free territories, and Government enters in possession. Considering, further, that in the contract effected by the Federal Executive with General V. Pulgar on May 12, 1881, and approved by the Congress on the 24th of same month and year, the period expired within which the mines conceded by it were to be put in exploitation, as likewise the prorogation which was granted to him at his demand to that effect, in conformity with the same contract. The executive is not authorised not even to consider, much less to approve, the agreement which Mr. Albert A. Nicholson in the name of the Guayana Company has presented to the Ministry in a printed form, dated Cúcuta, Bolívar, May 31, just passed. Let it be communicated and published.—For the Federal Executive, M. CARABANO.

Mr. Nicholson evidently anticipated that he could not support his right on the Guayana concession, and to add to his *mala fé*, he created another pretension, which consisted of a sham purchase of the No. 9 concession at a nominal price from a Mr. Smith, who had already been declared by the courts to have no rights or ownership in the said property. We must take this opportunity of expressing our surprise that the gentlemen composing the board of the Chile Company (who hold responsible positions in the City of London) should not long since have repudiated the unwarrantable act of their agent, and that they should have, in fact, sanctioned by their silence this attempt to acquire property belonging to other people, and conveyed to them by formal acts and deeds, which have been confirmed and approved by the courts in Venezuela. Now, gentlemen, the fact that a large amount of gold is taken from our concession No. 9 is a proof that the concession is extremely valuable, and it is our intention to prosecute the action already commenced against the invader of our rights, and, in fact, to support the decrees already pronounced by the Venezuelan courts. I hope at our next meeting to report to you favourable results, both as to this matter, and as to the general enterprise in which we have embarked. That, gentlemen, is the statement I have to lay before you. The company may be said to have been scarcely formed, therefore no accounts could be presented, and no results of working could be put before you at the present moment, as the company has only just commenced to work the property we have in hand. I think I have given you sufficient information. We have the full equipment for the projected works; we have the shaft already completed to a considerable depth, and the galleries as well, and what is to be done is to push on the works and try to extract the quantity of ore requisite to enable us to present results such as we anticipated. If any gentleman has any questions to ask I shall be

happy to answer them. I will now propose that this statement be adopted, and that will be the whole business to be transacted. The resolution was then put and carried. A vote of thanks to the Chairman closed the proceedings.

QUARTZ HILL CONSOLIDATED GOLD MINING COMPANY.

In pursuance of section 139 of the Companies Act, 1862, a general meeting of shareholders was held at the offices, Gresham House, Old Broad-street, on Tuesday, "for the purpose of receiving the report of the liquidators showing the manner in which the winding-up of the company has been conducted during the preceding year, and also for the purpose of accepting the resignation of Mr. F. F. Powell, one of the liquidators of the company, and of considering, and if deemed advisable, of appointing a liquidator in his place to continue the voluntary winding-up of the company jointly with Mr. C. H. Dunhill, or of authorising Mr. C. H. Dunhill to conduct the liquidation alone as sole liquidator."

Mr. C. H. DUNHILL, one of the liquidators, occupied the chair.

Mr. TRUBAN read the notice calling the meeting.

The CHAIRMAN said that this was purely a formal meeting to satisfy Mr. Beall, and to prevent annoyance. It was the intention of the directors not to have held the meeting until something more definite was settled with regard to the lawsuits now pending, and which now that the law courts were open, was expected to be settled very shortly. The liquidators during the past year had done their best to put an end to the lawsuits left from the old company, and they had paid off the debt of 3000l. by money received from the Denver Company for the purpose. The solicitor, Mr. Snell, was present, who would inform them of the present position of the lawsuits. There was no resolution to be placed before the meeting except that Mr. Powell, owing to the state of his health, had been ordered to New Zealand, and had, therefore, been compelled to resign his position as one of the liquidators. Mr. Powell had worked hard for the company, and the shareholders were greatly indebted to him for his exertion. He should be happy to answer any questions relating to the liquidation, and he hoped before long to call them together to finally close the Quartz Hill Company.

Mr. SNELL said the meeting would not have been held had not Mr. Beall seemed inclined to make a fuss about the matter. It was necessary that a meeting should be held within 12 months of the company going into liquidation or as soon after as was convenient, and Mr. Beall applied to know why it was not held, and, therefore, the liquidators thought it better to hold it, although all they had to say was that the assets had been transferred to the Denver Company, which had undertaken all the liabilities of the Quartz Hill Company. Mr. Beall had an action to recover sums to the amount of 1500l., and the action was not only against the company, but also against four or five promoters. The cost of that action had gone to a trial would be between 1000l. and 1500l. That case was undertaken by Mr. Beall on the statement that the parties joined in that should be liable only to a subscription of 2s. per share. That action was carried on by Mr. Beall, but he believed it had been stated by some of the plaintiffs that they did not know what they were entering upon, and, in fact, an application had been made by one of the parties for the return of the papers on the payment of 1l. and an order had been made that this should be done, and Mr. Beall had to pay the costs. Had it not been for that the liquidation would have been closed.

A SHAREHOLDER asked whether there were any accounts?—Mr. SNELL said the whole had been handed over to the Denver Company, and the accounts would be presented by that company. Every shareholder in the old company was entitled to a proportion of shares in the new company.

Mr. F. R. WILSON said he was sure they all deeply regretted the resignation of Mr. Powell, and the course which led to that resignation, and he was sure that the shareholders would all join in the belief that Mr. Powell would return from New Zealand fully restored in health. He thought there was no occasion to appoint another liquidator, as the liquidation could be concluded under the able supervision of Mr. Dunhill, who had laboured hard to bring the affair to a successful issue. He moved that the resignation of Mr. Powell be accepted, that a vote of thanks be passed to him for his services, and that no other liquidator be appointed, but that Mr. Dunhill be requested to finish the liquidation.—Mr. DAWSON seconded the motion, which was carried.

A vote of thanks to the Chairman closed the proceedings.

UNITED MEXICAN MINING COMPANY.

The ordinary half-yearly general meeting of shareholders was held at the offices of the company, Great Winchester-street, on Wednesday, Mr. G. HARRIS in the chair.

In the absence, through indisposition, of Mr. W. M. Browne, the secretary, the notice calling the meeting was read by Mr. J. H. PAVEY, the acting secretary.

The directors report that the mine of San Cayetano de la Ovejera had now become a profitable undertaking, and they give a tabular form showing the results of the mine for the four quarters ended July 28. There has been an excess of returns over outlay for the year ended July 28, the returns of the mine of Reyes and Jesus Maria have continued to work these mines, but without profitable results, consequently the company have not received any receipts in liquidation of the respective debts due therefrom. The accounts of the hacienda of Duran for the half-year show a loss of \$2894, in reference to which Mr. Hay reports that in July and August he raised the charge for reduction as well as augmented the grinding power from 24 to 28 arrastres, thereby feeling confident that when the accounts are made up at the end of the year, a better result would show itself.

The directors have sent a further supply of rails and other appliances, which have been shipped to Vera Cruz on account of the mine, and hoisting crabs and other gear are ordered, and will go forward in a very short time. These appliances will be the means of greatly facilitating the extraction of ore, and also considerably diminish the expenditure. They cannot conclude without stating that the favourable opinions expressed by them in the previous reports issued to the proprietors, "that ultimate success would result by steadily persevering in the explorations in this extensive mining property," appear to be realised, and they confidently look forward to much more favourable returns being obtained. There is also a possibility, that as the mine of San Cayetano may be considered from the recent discovery to be the key to the whole of the La Luz lode, the undertaking may yet become one of the greatest mining properties in the Republic of Mexico.

FINANCE.—On Oct. 1, the date of the last letter from the commissioner, his available funds at Guanajuato amounted to \$6579, without any liabilities, and the estimated value of ore under reduction to \$73,150, and he advises that he intends sending to the board by next French packet a remittance of six bars of silver. His dispatch also states that the improvement in the mine continues.

The CHAIRMAN, in moving the adoption of the report and accounts, said: Gentlemen, the directors have great pleasure in meeting you here to-day, inasmuch as the hopes which we have so constantly expressed from this chair that this company would ultimately be a success, are now realised, and we have, we think, a very splendid property second to none in Mexico. (Cheers.) The gigantic work in the adit, which has been so many years in progress, has now led us, I may say, into great wealth, because we are continually improving the production from the mine; and now that we have provided Mr. Hay with all the rails and other appliances which he requires to tram out the ore, we are looking to very much greater results. Since we last had the pleasure of meeting you the output of the mine has very sensibly increased. If you will kindly refer to the figures on the other side of the report you will see how progressive the mine has been. We have thought it better to give you the four quarters ended in July last, simply because you will then be able to see how progressive it has been. You will see that the excess of returns in October, 1882, was simply \$4709; in January, 1883, \$14,082; in April, 1883, \$28,052; and in July, 1883, it was \$48,200. We are now working to even a greater extent without the appliances which we sent out. We have not yet got advice that the whole of the rails have been laid, but they will be very shortly, as they all have been sent off. There are some few other things to send, and they will be shipped very soon. We have received advice that at last they have begun to remit to this country. We have on the way some bars of silver, consigned to the Bank of England, of the value, as we make it, of about 1700l. This is small and the first consignment, but the directors hope and believe it will continue and increase. The report goes so fully into details that I need not dwell on it at any length. We have a sketch map here made up to a certain date, and containing some additions to the map last issued. I now beg to move the adoption of the report and accounts, and if any gentleman has any questions to ask I shall be happy to answer them, and give every information in my power. Perhaps some gentleman in the room will second that, and then we can proceed with the discussion.

Mr. S. GOLDBLUM seconded the report, and said that he was very glad to see that the report did not contain any Mexican balance-sheet, and, therefore, he had to refer to the last balance-sheet for the point he wished to have elucidated. There was always in the balance-sheet a large amount expended besides the capital which had been invested in the mine; he asked for an explanation of that?—The CHAIRMAN: Not a very large amount—only \$5896.

Mr. HUNGE: On the new concern altogether \$348,000, and \$23,000 last year, or \$371,000 altogether. Has that amount to be made up out of the profit of the new concern before there are any dividends?

The CHAIRMAN: You will see there is an item of \$95,000 with a star against it in the Mexican account in the new concern. This is the profit of the mine of San Cayetano for the four quarters ending July 28 last. It is disposed of as follows:—We have spent upon five different mines just sufficient to keep up our rights, amounting to over \$5000. We have also disposed of other moneys in this way:—There is the amount of \$5000 odd paid to owners without any (contract)—the shareholders who did not come into the arrangement, but who held aloof, and we were obliged to give them so much money, and we have given it under contract. Then we were obliged to form a suspense account to take half the profit of the mine until it amounted to \$160,000. When the \$160,000 have been placed to reserve we and the owners divide according to our proportions—three-fourths for the company and one-fourth for the owners. The amount apportioned to reserve is \$42,000, and the amount paid to owners with ore, who are partners with us is \$5900, leaving balance for the mine of \$36,000.

Mr. HUNGE: Will the company be at liberty to distribute the \$36,000 as dividend, or is there any claim?—The CHAIRMAN said the only claim, was to the extent of \$2000, so the shareholders are at liberty to deal with it as they please, and he hoped that amount would be very largely increased.

A SHAREHOLDER said the accounts were made up to June 30; could the Chairman give an approximate estimate of the receipts and expenditure up to date?

The CHAIRMAN said the succeeding two months had produced about \$34,000. They were restricted in the output till the tram was fixed. Of course, that \$34,000 was in ore, but it could be sold at any moment, and, in fact, in another week the directors expected to receive information of a public sale of ore. The shareholders had already waited so long that the directors even at a slight

sacrifice thought it better to sell the ore in public market and remit the proceeds to this country.

The SHAREHOLDER said the directors had also waited a long time, and had done a good deal of work without remuneration.

A SHAREHOLDER asked whether the accounts could not be made out in English money instead of Mexican dollars?

The CHAIRMAN said that the dollar fluctuated, and the present system was considered best. The dollar was taken at 4s. He should like to read a letter which the directors had received a few days since from Hamburg, from a gentleman named Oetting, who had been many years connected with the mine, and which contained news three weeks later than had been received by the directors. The letter was as follows:—"I beg leave to inform you that on Oct 27 I received a telegram from a correspondent at Guanajuato as to the mines; and, as regarding the mine of San Cayetano, that a decided improvement had taken place, which, no doubt, will be of interest to the directors to communicate to the shareholders at the ordinary half-yearly meeting, which is to be held on the 7th inst." That was very important, as it showed that an improvement had taken place three weeks later than the date of the directors' advice.

Mr. ROBERTS asked whether the directors could not arrange to have telegrams sent home giving the latest information?—The CHAIRMAN said the directors had never considered it necessary, but, of course, if any very important discovery were made, and Mr. Hays sent a special message, it would at once be communicated to the shareholders.

A SHAREHOLDER asked whether the 1767 unexchanged shares belonged to the company?—The CHAIRMAN: No, to the original proprietors, who did not come into the reconstitution of the company in 1862, when it merged into a limited company. I do not think any claim will be made, but we are bound to exchange them at any time if they pay the calls. We cannot forfeit them. It is a positive debt in perpetuity. He (the Chairman) in answer to a further question, said that there was not now any consulting engineer in England; but in Mr. Kocha, who was now at the mine, they had one of the most able engineers in Mexico, who possessed the full confidence of Mr. Furber, the former consulting engineer, and recently one of the directors.

The resolution for the adoption of the report and accounts was then put and carried.

On the motion of Mr. GOLDBLUM, seconded by Mr. HUNGE, a vote of thanks was passed to the Chairman and directors, and the meeting broke up.

SOUTH-EAST WYNAAD ESTATES AND GOLD MINING COMPANY.

An extraordinary general meeting of shareholders was held at St. Michael's Hall, George-yard, on Nov. 2.

Mr. ARTHUR HALL in the chair.

Mr. W. H. THOMPSON (the secretary) having read the notice calling the meeting.

The CHAIRMAN said—Gentlemen, at the same time with that notice we sent out a circular which explained fully the object of this meeting. We asked you to come here to consider whether it would be more desirable to wind-up the company by voluntary rather than by compulsory liquidation under the Court's order. You are all aware that a petition has been presented by Mr. Evans to wind up compulsorily; and Mr. McNeil, who put in the petition, addressed a letter to the board to say that he did not do this in a hostile spirit at all, but that it was the only safety that Mr. Evans had of getting his money, and the only course that he could adopt. Therefore, he filed this petition, but he did not at all wish that it should be regarded as hostile. He has not stated in writing that he would co-operate with any resolutions passed, but we have reason to believe that he may fall in with anything that is decided here to-day. Therefore, we wish you to consider, taking it as a settled point that the company cannot be carried on (and in order to show you the state of the company at present, the directors have prepared a short résumé of the report, which if you will allow the secretary he will read, so that you will exactly understand how we stand, and what has been done recently), what is the best course to pursue.

The SECRETARY having read an abstract of the report, The CHAIRMAN continued—The petition for winding-up is fixed for to-morrow, and so whatever should be done ought to be done soon. In order to carry out the object of the meeting we have prepared a resolution, which will be put to you. Mr. Cooper and Mr. Stewart are present, I think, so that if any gentleman wishes to ask them any question I have no doubt they will be glad to answer it. He concluded by moving "That it has been proved to the satisfaction of the company that the company cannot by reason of its liabilities continue its business, and that it is advisable to wind-up the same, and that the company be wound-up voluntarily."—Mr. LAING seconded the motion.

Mr. SNELL wished to know the time that Mr. Evans wanted his money paid by. He understood that Mr. Evans was quite ready to give the company time to raise the money. He wished to know the date at which the company first heard of Mr. Evans' wish to have his money back?—The SECRETARY: Sept. 26.

The CHAIRMAN: The directors are very much surprised that this petition has been presented.

Mr. SNELL asked whether anyone had seen the power of attorney?—The SECRETARY replied in the affirmative.

Mr. SNELL asked what the company's liabilities were at the present moment besides Mr. Evans' claim?—The CHAIRMAN: Between 5000 and 6000, which is due to Mr. Stewart, and two or three small amounts besides.

Mr. MONTEFIORE explained that Mr. Evans' calculation that the expenses would be about 4000 a month was wrong. It had been found that there were more than that, and there were some expenses which he had not taken into consideration which had to be provided for in London. They all understood that Mr. Evans was to remain at the mine, and make an exhaustive trial, being himself very much interested in it, and see whether it could be carried on as a paying concern or not. But instead of that Mr. Evans remained only a week on the property, and did not wait to see Mr. Stewart's working, which was one of the principal things he undertook to do, thus failing to carry out the contract with the shareholders. Mr. Evans had told him (the speaker) that he should not press the company at any time for money, but his present action was in utter contradiction to what he said.

Mr. SNELL condemned Mr. Evans' conduct as disgraceful.

Mr. COOPER believed Mr. Evans' claim was 11,000l., and thought the estates were worth a great deal more than that, and before they were formed into a company they must all know that it was mortgaged to the extent of 15,000l. Since then they had been improving the property by planting cinchona, making roads, &c., and he estimated that it was now worth 25,000l. at least, and it would be a pity to throw it off for 11,000l. It lay in a valley with mountains on each side, and was very suitable for the cultivation of profitable crops.

Mr. SNELL suggested the adjournment of the meeting to consider what steps should be taken in selling the property.

Mr. LAING thought that in the present condition of the market it was useless to do that.

Mr. STEWART, who went out to examine and report upon the mine with Mr. Evans, then read an abstract of his report, which he said he would place in the hands of the shareholders in the course of a few days in a more extended form.

After some discussion as to the nature of the property, Mr. HILLIARD (the solicitor) in answer to Mr. SNELL explained that he had gone to the solicitor who was entrusted with presenting the petition on behalf of Mr. Evans, and ascertained from that gentleman that there was no prospect of getting his consent to let the petition stand over, and it was for that reason that he (the speaker) advised the directors to call the present meeting. As regarded Mr. Evans' engagement, and the company he offered no remarks on it from a moral point of view, but looking at it from a legal point of view, there was nothing to urge by which they might hope to get the petition dismissed on the ground that he was not a full creditor. Therefore he was of opinion that they could not resist the petition, although he must say there was no more surprised than himself when it was presented. The resolution was then put to the meeting and carried unanimously.

The CHAIRMAN: There is another resolution with regard to the appointment of Mr. Henry Hays as liquidator.

Mr. SNELL thought it would be much better if two gentlemen at the board would act in that capacity.—Mr. MONTEFIORE was quite sure Mr. Evans would not agree to that.—Mr. GRAHAM seconded the motion for the appointment of Mr. Spain as liquidator, but on being put to the meeting it was negative.

Mr. SNELL subsequently proposed the appointment of Mr. Arthur Hall and Mr. W. H. Thompson as liquidators.—Mr. LAING seconded the motion, and it was carried unanimously.

The proceedings then terminated, according to a vote of thanks to the Chairman.

PRINCE OF WALES SLATE QUARRY.

The ordinary general meeting of shareholders was held at the offices of the company, St. Clement's House, on Tuesday,

Mr. H. L. HAMMACK in the chair.

Mr. G. J. GRAY (the secretary) read the notice convening the meeting.

The CHAIRMAN said it would be in the recollection of the shareholders that at the date of the last meeting the shaft, which it had been decided to sink below the No. 5 floor in order to test the western vein at the Prince of Wales Quarry in depth, had then just been commenced. Since that meeting the shaft had been sunk to a depth of 22 yards below No. 5, and a tunnel had been driven 18 yards west from the bottom with a view of reaching the point where good slate-rock was met with in the level above, but unfortunately they had been obliged to suspend operations for want of the capital necessary to complete this work. A tunnel had also been driven east for a short distance from the shaft, and had just entered what seemed as far as clearance is concerned excellent rock, samples of which were on the table. The secretary had visited the property recently, and Mr. Kellow, who had had charge of the work there was also present, and the meeting would, no doubt, be glad to have their reports. In conclusion, he moved the adoption of the accounts.

The SECRETARY said he visited the quarry in August, and made a careful examination of the tunnel, then being driven west from the shaft. At the time of his visit the distance driven was 12 yards, the rock being broken and small, owing to the presence of two posts, but the clearance was all that could be desired, and it was a pity not to have continued this level for about 18 yards further to bring it vertically under the spot in the level above, where the small chamber had been opened. It was a pity also to have suspended the driving of the tunnel east of the shaft in the face of the samples now before the meeting taken from the forebore of this tunnel.

Mr. KELLOW, the agent at the quarry, expressed his regret that the directors had been obliged to leave standing the shaft of the slate-rock that seemed to be good. Of course neither he nor anyone else could see through the ground, but if he had been spending his own money he would not have stopped this tunnel, as it was quite possible that there might be on this side of the shaft a first-rate quarry, and he was strongly of opinion that this rock should be opened on either by clearing away the fall of debris, or by continuing the tunnel east. The former would now, perhaps, be the best course to adopt, and he should be

IMPORTANT MINERAL DISCOVERY NEAR KINMARNOO, CO. KERRY, IRELAND—MOST EXTRAORDINARY REVELATIONS IN CONNECTION WITH THIS DISCOVERY.—Ah! Is not this very mineral discovery that has led to the deplorable murders that were being committed in the Phoenix Park as well as others equally deplorable in Ireland. I ask is it not a crime to be silent where the lives and liberties of a people have been sacrificed? Yes, more, when the trade and commerce of a great people have been paralysed by ruthless hands for a political object. Will the Marquis of Hartington look this right in the face, and persist in an investigation of these facts? If so, Ireland will get the best of her fighting men. She will afford no more soldiers, and then shut up some further sowing seeds of discord so uncharitably planted by the King and Majesty's subjects. Wanted a partner or two to enable the development of this great mineral treasure. As no letters can reach me having reference to these minerals, if you want to make wealth let me respectfully ask you to come and judge for self.—P. M. MCLOYD, Peaslee, Kinmaro, Kerry.—(APPEAL)

WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,
MINEOWNERS, STOCK AND SHARE DEALERS, &c
1, ST MICHAEL'S ALLEY, CORNHILL, LONDON

There are differences of opinion regarding most things, and in many things where one would imagine scarcely any difference of opinion could exist. In mines, speculative or otherwise, it may be almost said "as many men so many opinions;" and people often get bewildered by them, and sell out shares just at the time they ought to buy. We remember nearly 40 years ago we took up a mine that everybody abused; we bought all the shares we could get for our clients—but many of them were frightened out of their shares by the remarks and volunteered opinions of those who had other things to recommend; so, instead of shares going up, they went down, and calls were frequent, and those who had taken our advice began to abuse us for misleading them. Even practical agents abused the mine when they inspected it, and one plainly told us that he would eat all the copper ever found in it. We believed, however, in the opinion of the resident agent, and stuck to him, and only a very few months after one agent had promised to eat all the copper found a discovery was made; the shares rose from 5s. to 300s., and one client alone cleared 10,000l. After this the mine paid over 50,000l. in dividends. The agent, who was manager of the mine at the time, is still alive and hearty, we hope, and will remember all this.

Now there are two kinds of mining—real mining and market mining, and we go in for the former. Prince of Wales, as our correspondent says truly enough, has been a sad drag. But we have not only carried on the largest interest in it, but have also had to advance money constantly through the apathy of shareholders in regard to calls. We get, and have never got, any benefit out of the mine whatever, but look very shortly to be amply rewarded in a good mine. It was the same in Crebore; the calls were so constant for a few years that shares came down to 1s. 6d., and month after month we, as treasurers, had to advance the costs—otherwise the mine would have stopped, instead of becoming, as it soon did, one of if not the best copper mines in Cornwall. Do not, therefore, be afraid either of Prince of Wales or West Crebore; they may both turn out prizes yet, and being on the Cost-book System can be carried on, unlike some of equally good prospects under Limited Liability, with no want of fresh capital. We cannot control markets in dull times, and do not much regard them so long as mines continue right.

The Prince of Wales sells rather more than 100l. worth of tin per month from 12 heads of stamps, worked by night only. We are now erecting 12 heads more, so as to double the returns. We cannot at present say what the copper sampling will fetch, but the returns this four months will exceed the last in amount.

Before the water fell off at East Blue Hills, so that the stamps could not be worked, the mine was doing well, and as the water becomes plentiful will do well again. In April the tin sold realised 129l. 15s. 4d., in May 181l. 15s. 11d., and the cost of this month was 150l. In June the sale had increased to 259l. 12s. for the month, at a cost of 175l. Then the water began to fall, so that June sale was only 92l. 10s. 7d.; July, 75l. 12s. 10d.; August and September nothing. The agents are now stamping the accumulated ores.

There is a fine lode in the 55 west, at Prince of Wales; this is on the new discovery; the lode is 4 ft. wide, producing good rocks of tin. It is in whole ground to surface.

We understand the call at the meeting will be much less than the last; and that for the following four months the returns will still further increase.

On the Stock Exchange the principal business has been done in Mexican Railway stock, which has fallen over 15 per cent. during the week and about 20 per cent. since the last settlement. The dividend just announced of 4 per cent. for the half year ending June 30 is considered very unsatisfactory, though part of the falling off in dividend is accounted for by "increase of working expenses of a peculiar and accidental character," and that the Mexican Government owes to the company for freight carried an amount equal to about 1 per cent. dividend. Matters, however, do not look very hopeful for the shareholders with a continual falling off in the Traffic Returns (9000l. decrease last week), and no prospect of any immediate improvement. English Railways are somewhat better. North British, Great Western, Metropolitan District, London and North-Western, and North-Eastern being over 1 per cent. higher. Foreign stocks are dull, with but little business doing in them. Mexican Three per Cents. are lower, the fact of the Government being in arrears with the railway company having a bad effect on the market. American and Canadian Railroad stocks are steady; Grand Trunks have relapsed somewhat, the traffic return being considered disappointing.

FOREIGN MINING AND METALLURGY.

There is still no news to communicate with respect to the Belgian Coal Trade. The demand has not increased for industrial and metallurgical coal; but, on the other hand, it has not fallen off as regards household coal. Quotations have remained generally at their former level; but the reduced demand on the part of the Belgian Iron Trade has occasioned some weakness in industrial coal. Stocks are comparatively limited. The number of trucks carrying coal and coke which passed over the Belgian State Railways in the week ending Oct. 28 was 20,772, as compared with 20,341 in the corresponding week of 1882, showing an increase of 431 this year. The German coal trade is considered to be somewhat improving. The demand has become larger and transactions have been carried through with more activity; in one district complaints are being made in consequence of an insufficient supply of rolling stock. We learn that sundry Westphalian collieries have offered to contribute 12,500l. to assist the construction of a canal from the Rhine to Ems. In Upper Silesia some of the collieries have advanced the price of their production 10 pfennigs per ton, as from the 1st instant. Other colliery proprietors will probably follow their example. The extraction of coal in the Dortmund district in the third quarter of this year amounted to 7,009,403 tons, as compared with 6,777,158 tons in the corresponding quarter of 1882, showing an increase of 232,245 tons this year. The deliveries from the Dortmund district in the third quarter of this year were 7,013,078 tons, as compared with 6,801,265 tons in the corresponding period of 1882, showing an increase of 210,813 tons this year. The imports of coal into Germany in the first eight months of this year were 1,449,018 tons, while the exports from Germany in the same period amounted to 5,450,114 tons.

The Belgian Iron Trade remains in much the same state. Complaints are still heard of a scarcity of orders, and workshops fully employed are quite the exception. A few establishments have their production engaged until January; but, taking a general view of matters, it must be acknowledged that order-books are poorly filled for next year. The forges and rolling mills are only assured employment for a few weeks in advance. Under these circumstances the works are offering their production rather more urgently for sale. English pig can now be procured in Belgium a little below 27. 5s. 9d. per ton. Business in refining pig has been restricted; at the same time a quotation of 27. 4s. per ton has been generally maintained, while ordinary pig has sold for 27. per ton, and mixed pig at 17. 16s. per ton. The Athus-Halanzy group maintains its price at from 17. 18s. 4d. to 17. 19s. 2d. per ton. Iron has been in no great request. If business is still done upon the old basis price for No. 1, some concessions are made as regards higher numbers. There is not much doing in girders; at the same time they cannot be obtained below 51. 4s. per ton. There has been scarcely any change in plates, No. 2 having been maintained at 67. 16s.; No. 3, at 71. 12s. per ton. Experiments made at the Brasschaet Polygon with cannon manufactured by the John Cockerill Company have been attended with satisfactory results, the guns having resisted all the tests to which they were exposed. It is hoped, ac-

cordingly, that in future Belgium will be able to make its own cannon, and that it will not be tributary, as hitherto, to Krupp, of Essen. The Malines Construction Workshops are stated to have secured some important orders on foreign account.

There has been no important change in the condition of the French Iron Trade. Producers show a strong determination not to make any change in quotations; on the other hand, business at Paris is not carried through very freely or readily, and the average price obtained for iron does not exceed 77. per ton, terms which leave scarcely any profit to merchants, having regard to the rates insisted on by the ironmasters of the Nord. Steel rails have shown a downward tendency of late. The Orleans Railway Company has recently let a contract for 8000 tons of steel rails, and almost all the French steelworks took part in the adjudication. The tenders submitted were about 74. 4s. per ton, but two works made much lower proposals, the Denain having offered to deliver rails at 67. 9s. 4d. per ton, and the Steelworks Company of France at 67. 7s. per ton. This may be regarded as a first result of the competition, which has commenced in consequence of the great extension of the productive powers of French metallurgy during the last two years. The state of mechanical and metallurgical industry in the Austro-Hungarian Empire may be regarded as favourable. Work is so general, and orders are so important that an advance is shortly anticipated in prices. The construction workshops are as well employed as the works producing raw materials. As regards the forges they are so overdone with orders that they find it difficult to obtain all the pig which they require. The Hungarian Minister of Commerce has just given out orders for the material required for the Transversal Galician Railway. The house of Borsig, of Berlin, which submitted a lower tender than any other offer made by Austro-Hungarian works, obtained an order for 10 goods locomotives. The Florisdorf Works and the Vienna-Neustadt Works divided between them another order for 25 goods engines, and an order for ten passenger engines was given to the Staatsbahn Works. There is no material change to report in the tone of the German iron trade. The demand for pig has remained feeble, but there has been a slight improvement in the enquiry for iron. Iron wire has been neglected, but plates continue in good demand, and the steelworks are well provided with orders. Some fresh adjudications have taken place during the last few days, and have assisted in maintaining activity at the works. Thus the Frankfort Steelworks Company of the Rhine has secured an order for 2200 tons of rails at 71. 6s. 7d. per ton, while Messrs. Roehling, of Voelklingen, have taken an order for 1837 tons of iron sleepers at 51. 15s. 2d. per ton, and 72 tons of fish-plates at 51. 14s. per ton.

Mining Correspondence.

BRITISH MINES.

ANDERTON TIN.—W. J. Boshay, Nov. 6: We have now been to the west end of the level at the 20, and find we shall have about 5 or 6 fms. to drive to reach the cross-course. I have put a strong party of men to do this work, and they are pushing it on without stop; so soon as they get through I expect the water in the winze will be drained, and we shall then be able to get to our rich lode in the winze and the 20, and perhaps at the 10 also. There is a rise up between these levels, which gives good air. The lode in the adit level and stope are looking very well, and yielding good tin stuff for the stamps. Our drawing-engine is now in place, and will be at work as soon as our shaft is finished. Our engine and all our works are going on very satisfactorily. We are busy on the floor, and shall sell a batch of tin in a few days.

BEDFORD UNITED.—C. Trezise, Nov. 6: Not having taken down the lode in the ends on the north lode there is no change to report. McCann's Shaft, Bridge Lode: The shaftmen are getting on fairly well in sinking the shaft. The lode in 62 west is strong and masterly in appearance, though not cut through, composed of mundle and copper ore; a very promising lode. In the 62 east the lode is 2 ft. wide, producing saving work for ore and mundle. The drive in the 42 east is by the side of the lode. I hope to commence to take down the lode some time next week, when I expect to find an improvement. Three stope in the back of the 42 east are worth 10l. per fathom respectively. In the 30 east the lode is without change; stope in the bottom of this level is worth 12l. per fathom. The several tribute pitches on the Bridge lode and north lode are looking fairly well.

BEUNO CONSOLS.—J. Woolcock, Nov. 8: No. 1 stope maintains its improved character; worth 2 1/2 tons per fathom. No. 2 stope, 12 cwt. per fathom. No. 1 stope is worth fully 2 tons per fathom. No. 2 stope, 15 cwt. per fathom. No. 3 stope, 1 1/2 tons per fathom. The 40 yard level from new shaft is worth 3 tons per fathom. I expect rails and pumps in a few days, then we shall get to work in the engine-shaft in full swing.

BLUE HILLS.—S. Bennetts, R. Harris, H. Gripe, Nov. 7: The Pink lode in the 66 east end is in conjunction with a small cross-course, and worth about 5l. per fathom. The rise above the 80, on the top lode, is nearly being holed to a sink below the 70, and worth 8l. per fathom. The Baldhu lode in the 54 west end is producing low quality tin stuff. The 42 east end is unproductive, and the 20 east end is worth 4l. to 5l. per fathom.

CASHWELL LEAD.—John Peart, Nov. 3: The vein in copper hazel drift going west is about 3 ft. wide and half of it is filled up with loose pieces of ore, the other part is made up of fluor spar mixed with pieces of ore, altogether it is worth 3 tons of lead ore per fathom. The rise from this drift is yielding a fair quantity of ore and is looking better at each end. Copper hazel drift going east is poor, but do not expect much where we are. The vein in the Sooty hazel drift going east is fully 3 ft. wide, and mixed with pieces of ore, but does not improve much as yet, but will make fair business. We have sampled this week 100 bins of splendid lead ore.

CARNAVONSHIRE GREAT CONSOLS.—W. H. Borlase, Nov. 2: The lode in the 35 east end of new shaft continues to improve, and is now presenting indications of making a good lode shortly. The 35 west end is much the same as when last reported on, spotted with lead, and letting out water freely.

CARN CAMBORNE.—W. C. Vivian, Nov. 8: In the 105 cross-cut south from engine-shaft we have just met with a north branch of the south lode, which is yielding some good copper ore. The main part of the lode is still before us, but we may fairly expect to be cutting into it within the next fortnight. In the rise in the back of the 95 west of mine, on south lode, we have a lode of good appearance for copper, of which it yields good samples. In the 40 west of engine-shaft cross-cut on north lode are cutting south, as there appears to be more lode in this direction, and the indications are good.

CATHEDRAL CONSOLS.—S. Davey, Nov. 6: The lode in the shaft is looking better, and especially in the eastern end, where we have to-day broken some splendid work for tin, and, I think, in a few feet more sinking, we shall get it all through the shaft. In the 74 driving east, the lode is much larger, and is producing all saving work for tin. I consider our prospects very encouraging, and never looked better for something good in future than at present. Having sufficient water for stamping, we are doing our utmost to get all the tin we can against the meeting. All the machinery and pitwork are working admirably.

COLLACOMBE CONSOLS.—Wm. Skewis, Nov. 8: The engine-shaft is being sunk in good ground, and every effort will be made to reach the 103 as quickly as possible. The men are now cutting ground for bearers to carry plunger-lift; this being done the water from the 96 will be taken into the cistern, and the men will be able to do their work with more freedom. The lode in the 95 west still continues to produce saving work for copper ore. In the 70 west from shaft the lode is 2 ft. wide, worth 1 1/2 tons per fathom. The lode in the 40 east is poor for the time, but we think will improve. In this level west the lode is worth 1 ton per fathom, and the machinery and pitwork are working admirably. The cross-cut or pitches since last report.

COED-Y-FEDW AND PANTY-BUARTH.—R. Prince, Nov. 7: The 90 west has improved for lead I am glad to say. We are raising splendid stuff from here for the floors. The 100 west also shows a change in the right direction. In the 112 west we have cut into a lode, and are finding great stones of lead. I feel we are here close to a rich deposit. Trevathan's string as last reported, and likely to continue so.

CYMR DRYFOR AND DRYNARIAN (Drynarian Mine).—J. Davies, Nov. 8: We have commenced driving the level east from Boundary cross-cut on the copper lode; the lode is looking very strong in the end of the level. We shall follow this lode, but we cannot carry the whole of this lode with us, as it is so wide. I hope that before we drive many fathoms we shall cut lead.

D'ERESBY MOUNTAIN.—W. Sandoe, Nov. 7: We are making fair progress in the rise back of the No. 5 intermediate level, and expect to rise 9 to 10 ft. during the month. The full width of the stope was about 10 ft., but we are only carrying the rise about 4 ft. wide and 9 ft. long. This is sufficiently large for the shaft; the rise will yield about 1 ton of lead ore per fathom, but the richer part of the lode by far is standing towards the hanging side, which can be most conveniently stopped down as soon as the communication is made with the shaft above. In the No. 4 we have cleared the sink down 5 1/2 fms., and from this point have driven a bar of iron down about 7 ft., and can feel no bottom as yet, so this must be considered most favourable indeed for getting down the shaft; but I may explain that the sink is not quite in line with the shaft, and we shall have yet to cut down one end of it to match the shaft above and the rise below, but this I hope will not prove a very long or tedious job. At surface we have cleared up the sink to the bottom, and afterwards squared it down for the size of the shaft, collared it up with good oak timber, making a substantially good job of it, cut a drain around the shaft to take up the surface water, fixed tackle, and are now in full swing sinking the shaft, which is now down about 4 1/2 fms., and I hope we shall be able to make good progress with the further sinking of it. Every effort shall be put for that the three points to get this important work done in the shortest time possible.

EAST BLUE HILLS.—S. Bennetts, W. K. Mitchell, Nov. 7: Since the various rises have been holed, the hands thus liberated have been employed in stopping the back of the adit, one stope being worth 16 cwt. per fathom, and another 12l. per fathom. The water for stamping purposes is gradually increasing, and at present some 12 heads are being kept slowly at work.

EAST WHEAL ROSE.—W. Skewis, T. Doidge, R. Gill, Nov. 6: Penrose's engine-shaft is drained and secured 4 fathoms below the 60. The 50 south of Foster's shaft is being driven to intersect the east lode on the south side of the great iron course, which we expect to do in a few days. The 50 has been driven through the western part of east lode at the point where Innes' lode intersected it. We find it to be worth 16 cwt. of good silver-lead ore per fathom. This level will be continued south on its course, and we have reason to believe valuable lead ground will be laid open by this means. The 40 south of Roberts

shaft is suspended for the time, and the men put to drive east on Long's lode, which will prove the end and interest the eastern part of east lode, which we believe will be the most important part. The pitches in this part of the mine are without change to notice. Baynard's shaft is cleared to the 60, and also the cross-cut from this shaft west to Middleton's lode. This level is now being cleared on Middleton's lode to communicate with Penrose's engine-shaft. This being done will thoroughly ventilate this part of the mine, and enable the workings to be carried on with more freedom.—North Wheal Rose: The first 35 plunger-lift will be fixed completely by the end of this week, so that the work for the lift to the 50 will be commenced in the early part of next week, and as quickly as this can be finished, the 100-l. engine will be set to work, and the mine rapidly drained below.

GAWTON.—G. Rowe, Nov. 3: The part of the lode carried in the 117 east is 6 ft. wide, showing an improved appearance, and yielding sulphur and arsenical mundle, with good quality copper ore, to the amount of 6 tons per fathom. All the stope ground in the back of this level continues without change. The stope in the bottom at the 105 east is yielding 10 tons of arsenic and mundle per fathom. No. 1 stope in the back of the 105 east will yield 7 tons per fm. The lode in the 95 east is 4 ft. wide, yielding good quality mundle, with occasional rich stones of copper ore. The stope in the 52 west is yielding 7 tons of mundle per fathom. The lode in the rise and stope, in back of the 70 east, is yielding 9 tons of mundle per fm. No. 2 stope in the back of this level is yielding 6 tons of mundle per fathom.

GLASGOW CARADON CONSOLS.—Wm. Taylor, Wm. J. Taylor, Nov. 5: The ground in the engine-shaft is just the same as last reported. We are urging on the sinking as fast as possible, have now set two months' stent, the men have a premium if they do the task allotted to them in the time. In the 114, west of Harvey's lode, the ground and lode is improving, producing good stones of ore; a very promising end, and likely further to improve. In the 90, west of Harvey's north lode, we are driving on the south branch just out into, worth 5l. per fm., with another part standing to the north, which we think will unite a short distance ahead; this will, we expect, open a good run of ore ground. These points we are pushing on as fast as possible. The stope at the different levels vary in value from 8l. to 10l. per fathom. No change to notice in the tribute pitches, which are turning out about their usual quantities of ore.

GOODEVERE.—R. Knott, Nov. 6: The engine-shaft lode continues to present a very kindly appearance. We have opened on it now for about 4 fms. in width, all of which is being put to stamps, and as this part of the mine is about meeting the working expenses, I am urging on the operations here as fast as possible in the hope of finding the lode more productive as we advance into the hill. No other change to report this week.

GREAT LAXEY.—W. H. Rowe, Nov. 7: The 271 driving north of Welsh shaft is so far in a rather coarse description of lode with only small spots of blende. The cross-cut in the 259 end north not showing the country rock satisfactorily we are continuing it a short distance further to fully prove the ground at this point. There is no stuff for over 12 ft. in width with a little blende in places which we would prefer to see more concentrated and the lode more compact. In the 247 the eastern branch (upon which the end has lately been driving) continuing poor, we have now commenced a cross-cut westward towards the other division of lode. The winze near this end from the level above is nearly holed, and will lay open for stope some fairly good blende ground. In cross-cutting quite through the lode in the 235 north a branch of ore was met with, worth 12l. per fathom, but in driving southward towards the winze sunk from the 220 the lode has again become poor. The engine-shaft will be deep enough for the 247 this week, when we shall cut through the footwall portion of the lode, which, so far as can be seen, shows some good ore. No more ore of consequence has been met with in the 235 end south, the lode in which, however, continues of a strong masterly character. The cross-cutting west in 100 south has intersected a run of lookan stuff and a wall corresponding in bearing but not in underlie with that of the lode. We are inclined to think this will at least prove to have some connection with the regular lode, but after a little further cross-cutting shall be better able to say. Excepting an improvement in the winze in the 130, which is now worth 25l. per fathom, the other points in the deep mine are without material change. After completing the easting of this shaft to the bottom the cross-cut in the 130 lode is now being made, and will, we expect, reach it in about 3 fms. The 230 end north is worth 15l. per fathom. The 200 end 15l. per fathom. The 185 has fallen off considerably since last report, now worth only 12l. per fathom. The 170 end has improved to 20l. per fathom. A new winze in 185 to ventilate the workings in the 200 roof is worth 20l. per fathom, and another in a similar position in the 200 12l. per fathom. The stope throughout this section of the mine have very little altered in value since our full report. We have suspended for the present the driving of the 70, south in the 100, as we have commenced to rise and stope in the ore passed through. The late improved prospect in the adit end north on the eastern branch are interrupted by a slide, and the lode at present disturbed.

GREAT WEST CHIVERTON.—John Curtis, Nov. 3: In the 20 fm. level east the lode is 20 in. wide, with a leader of lead 2 in. wide, and looking to be more permanent than anything we have heretofore seen in the mine. In the 20 west the lode is near 3 ft. wide, composed of fine quartz, white prisms, intermixed with fine lead; on the whole we are looking much better. I think the improvement in the 20 east is the shoot of lead which has been talked about and seen in the valley.

GREEN HURTH.—Jas. Polgase, Nov. 1: The 44 end north is worth about 3 tons per fathom. No. 1 stope, south of No. 1 winze, is worth 2 tons per fathom. No. 2 stope, south of No. 1 winze, is worth 2 tons per fathom. No. 3 stope, south of No. 1 winze, is worth 4 tons per fathom. No. 4 stope, north of No. 1 winze, is worth 5 tons per fathom. A stope in back of Standage level is worth 3 tons per fathom. The trial drift, 30 level, is worth 1 ton per fathom. No. 2 vein continues about the same. Dressing going on well.

HALLS HILLS.—Mannor, Nov. 3: We are still shooting in the Sun side of the vein going west, and in doing so get a little more of the vein. We came in contact with some very hard whinstone which we expected in the whin all. This being the case we have not so much ore, but expect to get the hard stone shot down shortly.

HAREHOPE GILL (Edmondbyers).—George Robson, Nov. 3: During the past fortnight No. 2 east has been driven 3 fms., and No. 2 west 10 1/2 fms. without any material increase in the quantity of water, which is still small.

HEALEYFIELD.—J. Trezise, Nov. 2: There is not much change in any of our underground operations worthy of note during the past week. The Whitwell shaftmen will sink about 9 ft. this week, which depth will bring us to the random of the Derwent level. We have the same plate-belt on the east side of the bottom of the shaft as that which the Derwent level was driven in. We have started the crushing machinery again, and the fine weather has been quite opportune for dressing during the week. We have had a little better success at the Derwent level, having met with a few fathoms of open level.

HINGSFORD DOWN.—Thomas Richards, Nov. 7: Having completed the slip-road, dividing, casing, &c., the driving of the 52 east has been resumed; there is not much change in the lode, which contains caput, quartz, calc., &c., and a little yellow copper ore, with an increase of water. In the 40 east the lode is large, containing arsenical mundle, quartz, caput, &c., and occasional stones of both copper and tin ores.

MELLANEAR.—John Gilbert, Nov. 7: In the 30 cross-cut, driving south of Gundry's shaft, the ground is very promising in appearance, being mineralised throughout with veins of mundle and lead; judging from indications it ought to be very near a lode. In the 70 cross-cut, north of the main lode, east of Gundry's shaft, the ground is still mixed with a good deal of mundle, and is a little easier for driving. The lode in the 80, driving west, on south part, is 3 ft. wide, and yielding 1 ton of ore per fathom; it is rather disordered, but we think in going westward it will get more settled, and improve in value. The lode in the 100, driving west of shaft, on main part, is 5 ft. wide, yielding 2 1/2 tons of ore per fathom, and looking promising to open out a good piece of ground. In the 110, driving west of shaft, on south part, the lode is 5 ft. wide, yielding 1 ton of copper ore per fathom, and some saving work for tin. In the 110, driving east of shaft, on main part, the lode is 4 ft. wide, yielding 1 1/2 tons of copper ore per fathom, and occasionally some rich stones. The lode in the 120, driving east of shaft, is 5 ft. wide, and yielding 1 1/2 tons of copper ore per fm., but we expect it will improve again very soon. In the 120, driving west of shaft, the lode is 4 1/2 ft. wide, and yielding 3 tons of ore per fathom, but wet and troublesome for driving. In the rise in the back of the 110, at Gundry's shaft, the lode is 4 ft. wide, and yielding 2 tons of ore per fathom. The lode in the rise in back of the 120, east of Gundry's shaft, is 5 ft. wide, and yielding 3 tons of ore per fathom. The winze in the bottom of the 100, west of the old engine-shaft, the lode is 3 ft. wide, and yielding occasional stones of copper ore.

MID-DEVON COPPER.—J. Neil, Nov. 3: A Shaft: In draining water below the 80 preparatory to sinking we have had some trouble to get the bucket to draw water. We have raised the lift above the accumulation of sediment and debris, and overhauled the whole length of the lift (6 fms.) above the water, remade all the joints, and changed the value. All has now again been placed in position, and the water is now in for 55 fms. deep. There are 3 ft. of debris in bottom of shaft to be cleared. We are laying on pipes to convey the compressed air to the bottom of shaft to work the drill, and hope to have all in order for sinking by end of next week.—C Shaft: The stope in cross-cut north in extreme end of 50 east has been partially worked by two men and two boys with cross-drill. There is no change to notify in its appearance, and will still yield 2 tons of ore per cubic fathom. The men have been employed assisting at the work in main shaft when required.

MONA CONSOLS COPPER.—T. Mitchell, Nov. 7: There is not much change in the bottom driving since my last report. The lode consists principally of quartz intermixed with patches of kila, and producing occasional stones of copper ore. The engine and pitwork continue to work satisfactorily.

MOSTYN CONSOLS.—J. Woolcock, Nov. 8: We have the mine clear of water, and men have again resumed work in both the east and west levels. In the east driving we have a strong masterly lode, composed of clay and spar, and occasionally good stones of solid ore. To-day while underground in company with Capt. Eustace we broke some splendid ore, and from the appearance of the lode we may expect to meet with a strong course of ore any day. The 23 yard level still yields good stuff for dressing-floors. Capt. Eustace's report no doubt you will see in due course.

MOUNTS BAY CONSOLS.—W. Argall, John Rowe, Nov. 3: No. 1 Lode: The 20 driving west of new shaft is worth 6l. per fathom. The 20, east of Penrose's shaft is worth 5l. per fathom. We have eight tribute pitches working on this lode at 13s. 4d. in 12. The 10 cross-cut driving from the engine-shaft (No. 2 lode) is still in congenial ground, and we are anxiously looking forward to the cutting of the No. 4 lode, which we expect to cut good. We have five tribute pitches working on Nos. 2, 4, 5 and 7 lodes at 15s. in 12.

MOUNT CARBIS.—W. Tregay, Geo. Johns, Nov. 8: The shaftmen have very nearly completed the dividing the shaft, fixing footway, &c., from the 50 to the 80 fm. levels, and will be cross-cutting towards the great flat lode by latter part of this week. The lode in the winze and stope bottom of 50 is worth 25l. per fm. The pipe going down north-east from the carbons in the 33 is still producing some rich tin stuff. All other pieces as reported.

NEW CARADON.—N. Richards, Nov. 7: The pitwork referred to in last week's report is all on the mine, and most of the parts of water-wheel, and the men are to-day engaged getting the axle in its place, the putting together of which will with the other necessary work be forced on with all possible dispatch.

NEW KITT.—Wm. Vivian, Nov. 8: Thomas's Shaft: We are making good progress in sinking this shaft on the course of the lode, which is of a very promising character, producing a little tin, but not to value.—Engine-Shaft: The

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The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, Nov. 9, 1883.

IRON.	£ s. d.	£ s. d.	TIN.	£ s. d.	£ s. d.
Fig. 6ms, f.o.b., Clyde...	2 3 7½	—	English, ingot, f.o.b. 95	0 0	—
" Scotch, all No. 1...	2 5 0	—	" bars	97 0	—
" Bars Welsh, f.o.b. Wales	5 7 6	—	" refined	97 0	—
" in London	5 17 6	—	Australian	59 10	0
" Stafford...	7 2 6	7 5 0	Banco	—	nom.
" in Tyne or Tees	5 17 6	—	Straits	59 10	0
" Swedish, London...	9 0 0	9 10 0	COPPER.		
Rails, Welsh, at works	5 7 6	—	Tough cake and ingot	55 0	0
Sheets, Staff., in London	5 5 0	8 15 0	Best selected	67 0	0
Plates, ship, in London	8 10 0	8 15 0	Sheets and sheathing	71 10	0
Hoops, Staff., in London	7 0 0	7 10 0	Flat Bottoms	74 10	0
Nail rods, Staff., in Lon.	7 5 0	7 10 0	Wallace	67 10	0
Swedish spring	12 0	0 18 0	Bura, or P.C.O.	67 0	0
cast	30 0	0 45 0	Other brands	nom.	64 10 0
Swedish, keg	15 0	0	Chill bars, g.o.b.	60 10	0
" fag. hain	15 0	0	QUICKSILVER.		
Rails at works	4 10 0	4 15 0	Flasks, 75 lbs. war.	5 5 0	—
" Light, at works	6 5 0	—	PHOSPHOR BRONZE.		
LEAD.			Alloys I., II., and IV.	£114 0	0
English, pig, common	12 0	0 12 2 8	" VI. and VII.	135 0	0
" " L.B.	12 10	0 12 12 6	" XI., Duro A, Duro B.	113 0	0
" sheet and bar	13 0	0	BRASS.		
" pipe	13 10	0	Wire	5 14	0
" red	15 0	0 15 10 0	Tubes	8 14	0
" white	18 10	0 20 0 0	Sheets	7 7½	0
" patent shot	15 5	0 20 0 0	Yel. met. sheath. & sheets	5 14	0
Spanish	11 15	0	TIN-PLATES.*		
NICKEL.			Charcoal, 1st quality	1 10	0
One 10 per cent. per ton.	—	—	" 2nd quality	0 10	0
SPELT.			Coke, 1st quality	0 17	0
Silesian, ordinary brand	0 0	—	" 2nd quality	0 16	0
special brands	2 6	—	Black	15 10	0
English Swansons	15 15	0	Canada, Staff. or Gla.	12 0	0
Sheet zinc	19 0	0	at Liverpool	12 0	0
			Black Taggers, 450 of	30 0	0
			14 x 10	30 0	0

REMARKS.—Our markets for the most part still remain in a very uninteresting condition; there is nothing to break the general monotony that exists, nothing to give tone to the markets, nothing to encourage buyers to come forward to stimulate the demand or to restore the trade to its normal condition. Rather as time advances the feeling appears to become more and more depressed, and everything is continued to be viewed through a gloomy medium. We have from time to time given various reasons for this unsatisfactory state of affairs, and have shown from what influences and causes the dulled commercial atmosphere is to be attributed, and here we need not recapitulate them, for there is no new feature, although perhaps some of the often circumstances of an adverse nature have developed and give cause for even still greater anxiety. We have shown on previous occasions how the bright aspects of the markets are more than counterbalanced by those of an unfavourable character, and now that the general gloom has been intensified, these bright features, like the sun on a foggy day, become obscure in the commercial mist. Nevertheless they exist, and the clouded and dulled state of the markets becomes evaporated, those bright features must shine forth and bear a very important influence upon the trade, giving cheerfulness where depression now exists, and making themselves still more marked and manifest because of the long time they have been kept from exercising their ordinary influences. But their effect will be in the future and not in the present, now, or at least for a time, the adverse features will in all likelihood predominate, but for how long must depend upon future events.

It is however noteworthy that there are few confident enough to believe in any speedy restoration, not even in the next few months, which time is invariably one of quietude, and much more now when everything appears black and dismal, but in the far future there is a good prospect of a development in business, and if producers will be moderate in their supplies, there is also a good chance of realising better rates. But to deal more with the present and immediate future the chances of improvement are indeed remote, and operators realising this fact are very slow to make purchases, and more particularly for forward delivery, hence prices in some instances for forward prompts are lower than those for cash. This has been a feature which has characterised iron for a long time past, and now it has extended to tin, and even at the reduced rates scarcely any buyers can be found. At times there are fluctuations, but upon the smallest advance sales are pressed considerably, and prices are again reduced at least to as low a figure as they started from, and more often than not to still lower rates. The reduced prices for forward prompts, compared with those for cash, is a feature which calls for comment. It not only proves that there is only little or no confidence in the immediate future of the markets, but it also indicates that in all probability some great, not far distant, change must be made. It would appear that either prices for forward prompts must advance, or those for cash must recede. Of the two the latter seems the more probable, because there are unquestionably a large number of anxious sellers in almost all the markets, and very few buyers who will make purchases beyond their most pressing and urgent requirements, which they appear to limit as much as possible.

COPPER.—There has been only a small business doing in this metal, and day by day prices for Chili bars have assumed an easier tendency. With the exception of the falling prices there is no particular new feature in the market; general business appears to be quieter and some operators seem to think that owing to the large deliveries that have recently been made consumers must have pretty well satisfied their wants, and that future orders of a *bona fide* character are not likely to be so plentiful as they have recently been. At all events the risk is somewhat great, and, therefore, operators prefer to leave the market alone, and hence whilst it is neglected prices crumble away, being without any substantial foundation. The prospects are uncertain, and although there are undoubtedly some features of a favourable nature existing they are not allowed to exercise their usual influence, and they give no support whatever to the market. Perhaps one of the most striking features at the present time is the comparison between the market now and at the similar period of last year, the statistical position being almost precisely the same, but the ruling prices are now very much lower. We drew our readers' attention to this fact last week, not because it indicates any speedy restoration of prices, for at present higher rates do not seem probable. It is a feature that in good times, or when the prospects were fairly bright, would have been laid hold of by operators, and in all probability caused a considerable advance in prices, but now this beneficial result is not likely to take place there is no inclination whatever to buy, especially as the dulled winter season is fast approaching. Prices, however, just now are low, and, therefore, greatly reduced rates do not appear very probable, but at the same time until there is more life given to the market, until holders show a little more strength in their efforts to sustain prices, there is not likely to be any recovery, but the market may be expected to drag on in the same dull and uninteresting condition, with prices continually tending in buyers' favour.

IRON.—This market keeps in a very dull and uninteresting condition, and prices for the most part assume an easy tendency. The demand for Swedish iron is quiet, nevertheless sellers do not press sales very largely, and consequently transactions are not very numerous. It appears that better prices than those ruling here can be obtained

in Sweden, and, therefore, sellers are not anxious to send their iron to this market. Indian specifications are only in small demand, and in short bars there is only a small business doing. In general manufactured iron buyers confine their purchases to what they require for the most part continuous to rule fail to produce any stimulus to the demand. Strike difficulties also still agitate the trade in some parts of the country; but little attention is given to these disputes between employers and employed, because they have been of so common an occurrence for a very long time past. There is still an undue and large amount of depression characterising the market for the raw material, and notwithstanding the existence of some very favourable features in the market prices continue to recede in spite of their already low figures. Heavy local consumption, good shipments, and place prices upon a more remunerative level. The tone is dulled, the market depressed, and even in Middlesbrough, where the stocks last month was reduced by about 20,000 tons, there is no appearance of vitality, nothing to indicate any speedy return to better times; but the feeling is there still dull, and the prospects considered gloomy.

In makers' iron there is a fair business doing, and quotations all round remain without alteration. The weekly advices received from Glasgow show that at the opening of the present week the warrant market was dull, and prices fairly steady at about 44s. 10d.; but on Tuesday the price declined to 44s. 4½d., there being buyers thereat at the close. On Wednesday there was a large business transacted at 44s. 2½d. to 44s. 1d., but towards the close of the day the market became stronger, and the price improved to 44s. 4d. Yesterday a fair number of transactions were carried through at 44s. 1½d. to 44s. 3½d., and the closing figure this afternoon is 44s. 7½d. The shipments last week were fairly good, amounting to 12,167 tons, against 10,792 tons for the corresponding week of last year, being an increase of 1375 tons, and which makes the total shipments for the whole of this year 553,789 tons, against 547,809 tons for the similar period of last year, and 497,426 tons for the same time of 1881. There is one furnace less in blast now than a week ago, the total being 104, while the public stock has been reduced by 758 tons, and now amounts to 533,230 tons, against 539,018 tons a week ago.

The imports of Middlesbrough pig-iron into Grangemouth last week were 5410 tons, against 4780 tons for the corresponding period of last year, being an increase of 630 tons, and which makes a total increase for the whole of this year compared with last of 24,855 tons. The advices from Middlesbrough show that the Cleveland market is very flat, and the prospects unpromising, business in all branches being extremely dull. Makers' nominal quotation for No. 3 is 38s. 3d. to 38s. 6d., but second-hand parcels are freely being offered at 35s. to 38s. 1½d. for present delivery, whilst for forward prompts quotations are still cheaper. There is next to nothing doing in warrants, which are held for 38s. Although No. 4 forge iron is being offered at the very low rate of 38s. 6d., it does not attract buyers. The shipments last week were more than 23,000 tons, and the public stock was reduced by 667 tons, and now amounts to 65,895 tons.

The demand for manufactured iron, and prices are again easier, particularly for forward delivery. The quotation for common bars is 54s. 12s. 6d.; for angles, 54s. 7s. 6d. to 54s. 10s.; and ship-plates, 54s. 7s. 6d. to 54s. 10s. The report from Wolverhampton shows that the tone is scarcely so firm, and new business is much quieter. Tank-plates are quoted at 71s. 12s. 6d. to 71s. 10s. and boiler-plates at 82s. 10s. to 82s. 10s.; sheets are offering at 71s. 15s. to 82s. for ordinary singles, and doubles at 82s. 5s. to 82s. 10s. In pigs there is not much doing, all-mine sorts being quoted from 60s. to 63s. 9d., and common Staffordshire at 40s. per ton. A similar report comes from Birmingham, new orders being scarce; but some of the works are fairly well off for work with old specifications. The minimum quotation for marked bars is 71s. 10s., and for the average ordinary qualities 64s. 5s. At the same time, notwithstanding these favourable rates, buyers hold aloof in the hope of being able to purchase at still lower prices later on.

TIN.—Since our last there has been a very weak market for tin, and prices have been daily reduced. If the course of the market this week can be taken as the forerunner of what is likely to occur in the future the prospects are indeed dull and black; but it hardly seems likely that there will be a continuous drop. Fluctuations are almost certain to occur, and efforts will in all probability be made to stay the downward tendency. Some rebound will in all likelihood be made, because there is still a great interest in the maintenance of quotations. The question which requires solution is whether such fluctuations will tend to the permanent good of the trade, or whether they will be merely unsettling the market for a time, and perhaps cause even further reduced rates afterwards. There is nothing in existing features to give support to the market, no unusual demand likely to crop up, no probability of any falling off in supply, no prospect of reduced stocks, and it is evident that there is no confidence whatever in the future of the market.

This is clearly proved by the comparatively low prices for forward prompts, which continue to be quoted at the same rate, or even below those for sharp cash parcels. One satisfactory point in the market is that, whatever may be the future—whether fluctuations occur or steadiness is preserved—there does not seem to be much chance of the figures quoted interfering in any way with the legitimate trade. Deliveries have for a long time past been well maintained, in spite of dear rates, and there is nothing to indicate they are likely to fall off; but it must be remembered that prices are influenced more by the speculative rather than the regular demand, and the former just now is quiet. The Netherlands Trading Company announce a public sale for the 29th inst. at Amsterdam, when 22,100 slabs of Banca and 6700 slabs of Billiton will be offered for disposal.

SPELT.—Very firm and in fair demand, and Silesian spelt, on which we must rely for our chief supplies, must be calculated at 16½ per ton c.i.f. London or Hull, as the water route is now not to be depended upon.

LEAD.—Spanish has been done at 11½ 12s. 6d., but is now decidedly steadier with buyers at that price and sellers asking 11½ 15s. per ton.

STEEL.—The demand is very dull and prices are easy.

TIN-PLATES.—Although there is still a very good demand for coke waster, the enquiry of late has slackened off to some slight extent.

QUICKSILVER.—The Board of Trade Returns for October are as follows:—

	1881.	1882.	1883.
Imports—October	600	950	218
January—October	47,046	44,728	53,660
Exports—October	2,032	3,374	4,254
January—October	19,330	31,780	39,763

The exports being again over 4000 bottles are satisfactory, and indicate that the stock is being gradually reduced. Our market is fair, with an entire absence of offers from second-hands, and a good business is doing for export and consumption at 54s. 5s.

The MINING SHARE MARKET has not been either so active or so firm this week, and in the absence of public buyers prices have given way all round, and quotations are nearly all nominal. The mines dealt in have included Great Laxey, New Kitty, Gunnislake (Clitters), Wheal Crebor, West Crebor, Prince of Wales, Devon Great Consols, Bratsberg, Potosi, Chile, and one or two others.

TIN.—Contrary to expectation, tin has been flatter; but no alteration has yet been made in the standards for ore. Tin mines are little dealt in. Blue Hills, ½ to ¾; Carn Brea, 3 to 3½; Cook's Kitchen, 13 to 14; Dolcoath, 60 to 62; East Pool, 39 to 40; East Blue Hills, ½ to ¾; Killifreth, 1½ to 1¾; New Kitty, 1½ to 1¾; North Blue Hills, 1s. 6d. to 2s. 6d.; South Condurrow, 8½ to 9½; South Frances, 7½ to 7¾; Tincroft, 6½ to 6¾; Trevaunance, 1½ to 1¾; West Basset, 3½ to 4; West Frances, 5 to 6; Wheal Agor, 13 to 13½; Wheal Grenville, 5½ to 6; Wheal Kitty (St. Agnes), 1 to 1½; Wheal Pevor, 3 to 3½; Wheal Uny, 1 to 1½. Wheal Basset, 2½ to 3½; at the meeting a loss was shown on six months' working of 2546½, and a debit balance of 3865½. A call of 8s. per share was made. The tin sold realised 5369½.

At the Wheal Coates meeting a call of 2s. 6d. per share was made. Levant, 5 to 6; at the meeting the accounts showed a loss on four months' working of 261½, and a debit balance of 1389½. At the Tregembo meeting the accounts showed a balance against the mine of 2147½. No call was made. Trevaunance, 2½ to 2¾; the mine is looking well, both for copper and tin. West Kitty, 13 to 13½; the meeting is fixed for Nov. 27, and we understand the dividend will be 11s. per share. Mounts Bay, 4s. to 6s.; North Penstruthal, 1-16th to 3-16th; New Trumpet, 1 to 1½; South Phoenix, 1 to 1½.

COPPER.—There is a strong feeling abroad that copper is going to advance, and it is founded on the fact that the stocks in hand decreased about 3000 tons in the month of October, and the demand still exists for telephone and other wires. And if all this be true it is time the miners were paid a better price for their ores in an improved standard. Bedford Uniteds are quoted 1½ to 1¾; Devon Great Consols have declined to 1½ to 2½; Devon Great United, ½ to ¾; Devon Friendship, 2s. to 4s.; Gunnislake (Clitters), 1½ to 2½; Mellanear, 3 to 3½; New Cook's Kitchen, 2 to 2½; New West Caradon, 4s. to 6s.; an improvement has taken place here. Prince of Wales have been weaker in anticipation of a small call at the meeting, and leave off 7s. to 9s.; the mine continues to look and open out well. South Devon United, ½ to ¾; New Caradon, 4s. to 6s.; West Caradon, 4s. to 6s.; West Crebor upon a slight demand advanced to 6s. to 8s., but leave off weaker at 5s. to 6s.

West Seton, 8 to 9; Wheal Crebor, 2½ to 2¾. South Caradon (Limited), ½ to ¾; the 160 east driving by six men, at 54s. 10s., is worth 3 tons of ore per fathom; this level is in advance of the others. The sampling on the 22nd is to be 230 tons of copper ore. Sortridge, 1s. 6d. to 2s. 6d.; the mine has been inspected by Captain Hooper, and he writes favourably of the prospects. South Penstruthal; the agent writes very hopefully this week, particularly of the lode in the 150 at flat-roof shaft; it is 8 ft. wide, and full of mineral, though not enough of copper to save at present.

LEAD.—There is scarcely anything doing in lead mines, and prices are merely nominal. Vans are quoted 4 to 4½. Great Laxey are

still lower, at 10½ to 11½; Roman Gravels, 6½ to 6¾. Tankerville Great Consols, 1s. to 2s.; there is a good report, and they have sold lead and blende this week for about 1500½. South Darren, ½ to 1; the 130 east is worth 1½ ton of silver-lead ore per fathom, and they have seven stopes worth 12s. 6d. to 2 tons per fathom. The sale this week (50 tons) realised 12½. Os. 6d. per ton. East Wheal Rose, ½ to ¾; Leadhills, 2½ to 2¾; Old Shepherds, 9s. to 11s.; Weardale, 1½ to 1¾; Gwern-y-Mynydd, ½ to 1½.

FOREIGN MINES.—Although the market for shares of this class has been dull, there has been more business doing in foreign than in other descriptions. Alamillos are quoted 1½ to 1¾; Almada and Tiritio, 7-16ths to 9-16ths; Arizona, 1½ to 1¾; Asia Minor, ¾ to ¾; Australian, 2½ to 3; Birdseye, 1½ to 1¾; Bratsberg, 2½ to 2¾; Canadian Copper and Sulphur, ¾ to ¾; Cape Copper, 4½ to 4¾; Chile, ¾ to ¾; the directors have received telegram: Remittance for Sept., 3529 ozs., working 40 stamps on nine days, and 55 stamps on 17 days. The remittance for same month last year was 1946 ozs. for 25½ days with 30 stamps. Colombian Hydraulic, ½ to ¾; Colorado United, 1½ to 2½; Copiapo, 3½ to 3¾; Fortuna, 3 to 3½; Frontino and Bolivia, 1½ to 1¾; General Mining, 6 to 6½; Indian Consolidated, ½ to ¾; Indian Glenrock, 1-16 to 3-16; Kapanga, 1-16 to 3-16; Lake Superior Native Copper, ½ to 1½; La Plata, ¾ to 1; Marbella, ¾ to 1; Michipicoten, ½ to ¾; New Emma, 1½ to 1¾; Nouveau Monde, ½ to ¾.

Panulillo, 6 to 6½; the directors have to-day declared an interim dividend of 3s. per share, free of income tax, being at the rate of 15 per cent. per annum for the quarter ended June 30. The warrant will be payable to shareholders upon the register Nov. 14, on which day the transfer books will be closed. Potosi, 3-16ths to 5-16ths; Quebrada Railway, 6½ to 7½. Richmond, 4½ to 5½; no dividend is declared this quarter. Rio Tinto bonds, 100 to 102; ditto shares registered, 20 to 21 (ex div.); to bearer, 19½ to 20½ (ex div.); Ruby and Dunderberg, 1 to 1½; South Australia Copper Mines Corporation, 7-16ths to 9-16ths; St. John del Rey, 70 to 80. Victoria Gold, 1 to 1½; one of the directors is on his way to the mines, so as to be able to report to the shareholders at the general meeting. Western Andes, 5 to 5½.

The Market for Mine Shares on the Stock Exchange has continued in the same depressed condition as noticed last week, some few transactions in Great Laxey representing the principal business in British mine shares during the week. In foreign mines there has been more doing than in British, but still the amount is very small. The Panulillo Company have declared an interim dividend at the rate of 15 per cent. per annum, and the Richmond Company have given notice that owing to the heavy stocks of lead ore on hand no dividend will be declared this quarter. At the close the prevalent feeling with regard to the future appeared decidedly more cheering.

Our usual telegram from Cornwall this evening states:—During the past week the Cornish Mines Share Market has been dull and shares generally are lower, in sympathy with the drop in tin. Dealings have been principally confined to Killifreth and Condurrow (both of which are firm), and West Kitty, New Cook's Kitchen, Wheal Basset, Dolcoath, Crofty, and Pedn-an-drea; the latter two being enquired for. At Tregembo a debit balance of 2147½ was reported, a satisfactory report being presented. At North Levant the shareholders are applying for additional land, for further developing the mine. At Levant a loss of 261½ was shown, at Wheal Basset a loss of 2546½, and a total unfavourable balance of 3875½ was shown and 8s. per share called up. It was stated that the mine had considerably improved, and the returns were being increased without any material additional expenditure. Dolcoath, 61 to 62; East Pool, 39½ to 40; Condurrow, 8½ to 9½; Crofty, 4½ to 5; South Frances, 7½ to 8½; Agor, 13 to 14; Wheal Basset, 2½ to 3½.

The North-Western of Urquay Railway Company announce the opening of a further section of 11½ miles, from Yaculi to Isla de los Cabellos. This makes 72 miles of railway opened and at work, leaving 43 miles to complete the entire system, the capital to construct which, the company state, they intend to issue immediately.

The Schwab's Gully Diamond Mining Company (De Beer's Mine) statement for the month ended Sept. 30 shows the quantity of blue ground hauled 3360 loads; washed 4291 loads; on floors at that date 17,337 loads. Diamonds to the amount of 3651½ carats, valued a 5112½ 6s., were found, and 3147 carats sold, realising 4525½. Revenue from other sources, 164½ 2s. 4d. The total working expenses for the month were 2098½ 13s. 10d. The registrar in London has received telegram announcing the declaration of a dividend of 5 per cent. for the past quarter.

The Ecton Company, the prospectus of which was advertised in last week's journal, has been freely supported by the investing public, the share-list having closed on Monday with more capital subscribed than was required. The allotment is to be made to-day. Advices received from the mines yesterday state that the recent discovery in Vivian's vein continues to improve, and the manager forwarded by same post some nice samples of copper ore taken from it. It is stated that a further steady improvement is to be expected as the driving approaches the cross-course some 20 fathoms ahead, and when that is reached astonishing results are expected. These cross-courses, which cross the lodes at right angles, have always been productive of great discoveries in the Ecton Mines. An interesting reference to the early history of these mines by an A.R.S.M. is published in the correspondence columns.

Devon Great Consols, 2½ to 2¾. Devon Great United, ½ to ¾; the half-yearly meetings of shareholders in these companies will take place about the end of the month: 859 tons of copper ore have been sampled at Devon Consols, for sale on Nov. 22.

South Devon United, ½ to ¾; the lode in Martin's shaft is fully 6 ft. wide, and worth 2½ ton per fathom. The 70 west continues to look promising for yielding large quantities of copper. Mr. John Moody, one of the largest shareholders in the company, has been elected to fill the vacancy on the board of direction.

Wheal Crebor, 2½ to 3; it is expected that the dividend to be declared at the meeting on Nov. 15 will be 2s. 6d. per share. This is one of the few Cost-book mines where the accounts are kept close up, all liabilities being ascertained and promptly met.

Wheal Pevor, 3½ to 3¾; the lode in the new shaft on Great North Downs main lode continues to improve, and is now producing black ore of rich quality. The agents are sanguine they will soon be able to report a good lode in this part of the mine. Richmond, 4½ to 5½; the week's run was \$15,000 from 261 tons of ore with one furnace. During the week the refinery produced doré bars to the value of \$18,000. The superintendent's report of the present condition and extension of the deadwork for the week ended Oct. 15 states that the 1050 west drift from rise from intermediate drift has been run 10 ft. Total 62 ft. In red limestone. The 1050 east drift from rise has been run 10 ft. Total 26 ft. In red limestone. The 10-0 north drift from south-east intermediate drift has been run 15 ft. Total 25 ft. In limestone. Reamed Oct. 8. On Tuesday the directors determined not to declare the quarterly dividend usually paid at this time. In consequence of the extremely low price of lead which has prevailed for many months, the stock at Eureka has accumulated, and now amounts to nearly 100,000 tons, and the present time is a very unfavourable one for disposing of it. The company is now, and has been for some time past making profits even at the present price of lead sufficient to pay a dividend of 2s. 6d. per share per quarter, but having reference to the uncertainty of realising the lead, the board think it advisable to postpone the payment for the present. The explorations in the mine have been carried on with regularity, but no large bodies of ore have been laid open. A small body of good ore has been found on the 300 level, and ledge matter and red limestone have been met with on the 1050 level. The furnaces and refinery are running regularly, the former smelting about 500 tons weekly, and the refinery turning out about \$16,000 to \$20,000 of doré bars weekly.

Ruby and Dunderberg, 1½ to 1¾; the usual weekly report does not advise any important change at the Home Ticket Mine. It is opening out well, though the quality of the majority of the ore is not very high grade. The telegram received on Tuesday last reports the nett receipt for the week as \$1116 from the Home Ticket, and \$192 from tribute ore from the Dunderberg Mine.

Californian Gold, ¾ to ¾; last week's mill run—not received until Monday—was 700 tons; yield, 1200½; smelting ore sales, 320½; total, 1520½. A further mill run—received on Thursday—was 273 tons; yield, 480½; smelting ore sales, 400½; total, 880½; making together for the two weeks 2400½, or an average of 1200½ per week. As the shaft goes down the lode is getting larger, and is now 3 ft. wide. The eastern 1400 ft. level and stopes continue to hold out well.

Flagstaff District, ½ to ¾; the secretary writes that some weeks since Capt. Gundersen reported the discovery of marketable ore between the 5th and 6th levels, and that advice has just come to

hand of his having shipped some 50 odd tons, which realised something over \$1000. The north-west winze was being rapidly sunk, and is now nearly 100 ft. below the 6th level.

Rohinoor and Donaldson, $\frac{3}{4}$ to $\frac{1}{2}$; the returns for September show that the total proceeds were 970*l*. 29 tons of smelting ore from the Donaldson averaged \$82.75 per ton, and 39 tons of smelting ore from the Champion averaged \$43.63 per ton. A good quantity of milling ore has been added to the amount already stocked in order to have a good supply on hand for the new mill, the machinery for which is now on the ground.

In Lead Mine Shares there has been no variation worthy of notice, and prices are purely nominal. Great Laxey shares have fallen during the week to 9, 10, owing to the smaller sales of mineral, but yesterday experienced a decided improvement and close 10, 11, with an altogether better feeling.

Tankerville Consols, 4*s*. to 6*s*.; the lode in Watson's engine-shaft below the 232 is 3 ft. wide yielding good stones of lead ore, and from the appearance of this lode which is underlying faster towards the main lode a junction of the lode may be shortly expected. The sale of lead ore and blende on Thursday realised 1480*l*.

Roman Gravels, $\frac{3}{4}$ to 7; the stopes throughout the mine are yielding ore in quantities equal to average of past six months. The sale of 250 tons of lead ore realised 1745*l*.

At the Stock and Share Auction and Advance Company's sale on Thursday the prices obtained, among others, were London Necropolis and National Mausoleum 10*l*. shares, 3*l*.; Mirror Advertising Company 1*l*. founders' shares, 3*s*. 6*d*.; South Staffordshire and Birmingham District Steam Trams 10*l*. shares, 5*s*. 6*d*.; South London Trams, 8*s*. 12*s*.; The United Horse Shoe and Nail, Preference shares, 10*s*. 6*d*.; Deferred shares, 5*s*. 6*d*.; Manchester, Bury, &c., Trams, 9*s*. 7*s*. 6*d*. The first week's traffic receipts of the Grand Trunk Railway main line amounted to 81,329*l*, being an increase of 251*l*. as compared with the heaviest week but one in the whole of last year. The receipts for the concluding eight weeks of 1882 averaged 76,347*l*.

It is notified that the debenture coupons, due Nov. 11, of the Mauritius Land Credit and Agency Company (Limited) will be paid at Messrs. Barnetts and Co's, and at the Royal Bank of Scotland, Edinburgh, and its branches.

The numbers are announced of 187 bonds amounting to 6700*l*. of the National Nitrate Railways Company of Peru. Issue of 850,000*l*. 7 per cent. Second Mortgage Bonds, to be paid off at par, on Dec. 1, at the offices of the International Financial Society, London, or at their agents in Paris, or Brussels.

The Arntson Coal Company at their meeting in Edinburgh on Wednesday declared a dividend of 10 per cent. as recommended by the directors.

WHEAL JANE.—The committee met at the London office on Monday, and after considering some 16 applications, it was decided to appoint Mr. Everett Hancock as secretary.

CANKIM BAMOO.—A box of alluvial quartz, received in London from the mines, has been analysed by Mr. F. Claudet, and in his certificate, dated Nov. 6, he says.—I have examined the sample of mineral received on Oct. 31, and find the result to be—Black stuff: Insoluble siliceous rock, 91.46 per cent.; oxide of iron, 3.80; carbonaceous matter, 4.40; gold and silver, 0.09; arsenic, 0.06; copper, 0.03; sulphur, none—99.84—that is, gold, 27 ozs. per ton of 20 cwt.; silver, 2 ozs. 5 dwts. per ton of 20 cwt. The insoluble siliceous rock gave—Silica, 66.70; alumina, 23.60; lime, 0.25; magnesia, 0.72—91.27.

THE PANAMA CANAL.—A despatch from Panama (Oct. 26) gives an account of the progress of the work on the Panama Canal. The total length of the canal will be 74 kilometres from the Atlantic to its mouth in the Pacific. It is divided into 12 sections, in which are employed daily 30 steam excavators, 40 locomotives, and 800 tip-wagons. There are 90,000,000 cubic feet to be excavated. The grand cutting, about two-thirds of which has already been excavated, is that between Obispo and Paraiso. The number of men employed upon the works exceeds 10,000, and the excavations up to Oct. 15 amounted to more than 2,500,000 cubic metres. The working force will soon be augmented, and will form a total of 15,000 men.

PATENT STEAM BOILER COMPANY.—This company, which has for many years enjoyed a high reputation for their Boilers and other sectional boiler which they have brought to a high state of perfection announce that on Nov. 1 they took into partnership Mr. Howard Lane, who has hitherto acted as their engineer. The business is to be carried on under the same style as in the past.

ENGLISH COAL AND GERMAN MARKETS.—As import and consumption kept balance pretty well prices in 1882 remained, says Consul-General Annesley, of Hamburg, unchanged until August, when a rise occurred on account of the higher English freights, which especially affected gas and small coals, and was sustained with little alteration until the end of the year. The imports of Westphalian coals were especially strengthened in the latter half of 1882 by the development of the iron industry. During the first half this business suffered from over production. The scarcity of wagons still affects this industry. A railway conference, which was held on April 13, 1883, was attended by delegates from the various Chambers of Commerce concerned, and resulted in a reduction of 5 marks per 10,000 kilos, or 6*d*. per ton, in the railway conveyance cost of such coal as was destined for transmarine export. Although this reduction was gratefully acknowledged, strenuous efforts are and will be made to extend this boon to all coal conveyed to the Northern sea ports, whether destined for export or for firing steamboats, &c. It is felt, and doubtless such a feeling will soon grow into a fact, that until a canal has been constructed, communicating with the colliery districts, English coals cannot be driven out of the market unless freights are reduced to 5 marks per ton for Westphalian coals. Discharging facilities will not be neglected in the new scheme for the free port district. The old prejudice against these coals may now be said to have been completely overcome, and their use is rapidly increasing amongst shipping companies, railway companies, and factories.

VICTORIA UNIVERSITY (OWENS COLLEGE), MANCHESTER.—At the annual meeting of Convocation on Tuesday (Prof. H. E. Roscoe in the chair) the question of conferring degrees upon qualified practitioners formerly students of the medical school was raised. A resolution was submitted expressing the opinion that it is advisable that such practitioners who have been trained in the Manchester medical school should be admitted to medical degrees with as little delay and as few demands upon their time as possible. It was urged that only the professional examination should be exacted, and that the resolution should apply, not only to men who had studied in the medical department of Owens College, but to those who passed through the medical school before it was taken over by the College. Vice-Chancellor Greenwood said he was afraid the supplemental charter of the University charter interposed some difficulties in the way of the proposal, and ultimately an amendment was adopted asking the University Court to consider "whether it may not be possible to afford to registered practitioners who have been trained in the medical department of Owens College special facilities to meet the requirements for medical degrees."

MINING INSTITUTE OF SCOTLAND.—Previous to the general meeting on Thursday the members made several interesting visits. At the works of the Glasgow City and District Railway the members were admitted to the shafts in Montrose-street, where the tunnelling was in mixed strata; at the Circus, West Nile-street, the tunnelling being on the surface and freestone; in West Regent-street, between Hope-street and Wellington-street, boulder clay; in Blythwood-square, freestone; and in West Regent-street, where Holland-street intersects, boulder clay and freestone. The operations were watched with much interest, the system of timbering, and the substantial brick arching were minutely examined and admired. At the offices of the Tharsis Sulphur and Copper Company, West George-street, the Council and others examined some old mine timbering found in the Tharsis Mines. One of the pieces was supposed to be the framework of the bottom of a shaft, and another the support to a gallery, and they are believed to belong to the time when the Romans worked the mines 2000 years ago. The wood, which was of pine, was very fresh from having been preserved by the sulphate of copper. It was chiefly remarkable for the limited width and breadth of the shaft and lowness of the gallery, and the strong resemblance which it bore, as regards construction, to the Welsh system of timbering. At the general meeting (Mr. Ralph Moore presiding) discussions took place on papers read at former meetings by Mr. Beith, "On Experiments with Forcing and Exhausting Fans," and Mr. Beilby "On Young

and Beilby's Process for the Treatment of Coal." Papers were also read by Mr. F. J. Rowan "On Gas Firing for Steam Boilers," and by Mr. David Cowan "On the Valuation of Ironworks and Mines."

NEW PATENT ACT.—Mr. W. Wise's summary of this Act has been reprinted from Engineering in pamphlet form, and appears likely to be useful as a guide to inventors and the public generally. Mr. Wise is a good authority upon the subject, and has evidently prepared the pamphlet with the utmost care.

The Society of Arts will commence its 130th session on Nov. 21, when Sir Wm. Siemens, F.R.S., Chairman of Council, will deliver the opening address. The Society has at present between 3000 and 4000 members, and is doing a vast amount of good in the diffusion of useful technical knowledge.

NEW AND ECONOMIC BELTING.—The latest patent in bands used for machinery is one for an invention by which it is claimed that the only good belt made of textile fabric can be produced—it is not affected by change of temperature, stretches very little, is thoroughly waterproof, is tested to be as durable as leather, and being without the objectionable joints and splittings of a leather belt it runs straighter and truer. The belt is made solely of the best Russian flax. In price it is from 25 to 60 per cent. cheaper than leather belting. It is believed to be the only belt made wholly of flax, and there appears to be full justification for the statement of Mr. B. A. Barczinsky, who is introducing it into the London market, that it has many advantages. The unusual strength of the belting results from its being folded somewhat peculiarly, and which is the reason of its stretching remarkably little. It is rendered waterproof by an entirely new process, the canvas before being made up being supplied to the manufacturer from the works of the Russian Government at St. Petersburg, where the process of waterproofing is conducted in camera. The peculiarity of this process gives it a marvellous grip of the pulley, and no matter how long the belt is used, this never leaves it. The flax belt has been in use in Russia for more than two years and a half, and it has given the greatest satisfaction. As a matter of fact the belts now ready for sale here are manufactured by machinery turned by belting of the identical description. Cotton belts warp, curl, and require oils and belt syrups to keep them on the pulley. The flax belt never requires any attention of this sort, and works as flat and handsomely at the end of its career as at the beginning, and it neither curls or warps. With all these advantages it is the same price as cotton goods, and yet flax as a marketable commodity is a much more expensive one than cotton. The belting is certainly likely to come into very general use.

CASELL'S PUBLICATION.—Archdeacon Farrar's Life and Work of St. Paul, part 22, contains the continuation of the narrative of Paul's last journey to Jerusalem, and the chapters on Felix and Paul before Agrippa II. Knight's Dictionary of Mechanics, part 33, extends from Trephine to Turbine.

CASELL'S ILLUSTRATED ALMANAC.—The new edition for 1884 has just been published, and a more attractive sixpence worth could scarcely be desired. In addition to the usual calendar matter there is a good tale, obituary of eminent persons, household notes, gardening, naturalists' calendar, and various other readable information, as well as upwards of a dozen well executed illustrations. The almanac is well entitled to extensive patronage.

EPPS'S COCOA—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure food and a properly nourished frame."—Civil Service Gazette.—Made simply with boiling water or milk. Sold only in packets, labelled "JAMES EPPS AND CO., Homoeopathic Chemists, London."—Also makers of Epps's Chocolate Essence.

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Notices to Correspondents.

MINING JOURNAL—LATE DELIVERY.—"D.G.K." (Jamaica-road) and others.—Owing to the breakage of a machine cylinder, and consequent damage, though slight, to one set of forms when only part of last week's impression had been printed, the delay of nearly an hour was occasioned, and hence many copies were not sent until a later post. As an hour's delay in posting often involves a delay of 12 to 24 hours in the delivery of newspapers, the lateness of arrival of which many complain, and which we much regret, is accounted for.

COAL RESOURCES OF QUEENSLAND.—In his very interesting article, the third part of which appeared in last week's Journal, Mr. Tenison-Woods states that a company is being formed in London to work the coal property of Messrs. J. Callaghan and Co. Will some correspondent kindly furnish the address of the gentlemen by whom the company is at present represented?—D.: Junior Carlton Club.

DIXON'S CALCULATOR.—"C.G." (Rheyl-Gae): No copies have yet been received in this country, and we are not sure that the work is yet issued in New York. Write Messrs. Trübner and Co., or Messrs. Sampson Low and Co., both of London, and either will supply the book as soon as ready. We do not know what the price will be, but American books are always more expensive than English.

Received.—"W." (New York): Send draft on London for \$35 to cover; B.E. and C. St. 4s. 6d.; G.C. St. 3s. 17s. 2d.—"R.K." (Ione, Nevada): The address has been altered—"A and Son" (New York): Inserted as desired, commencing last week; account sent by post—"J.N." (Alford): Both are progressing well and it is generally considered that it will well repay to hold, though there may be no improvement just at present—"J.R.M.R.": Answered by post—"J.S.P." (New York): Thanks—"T.C." (West Lydford): The matter shall be considered, and a reply forwarded by post—"J.F.": Attended to.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, NOVEMBER 10, 1883.

INSTITUTION OF CIVIL ENGINEERS.

Numerous as are the associations in this country for the diffusion of technical and scientific knowledge there is probably none which has played a more important part in assisting the development of those industries which have contributed to make the last half century remarkable as the most progressive in the world's history than the INSTITUTION OF CIVIL ENGINEERS, and in commencing their sixty-sixth session on Tuesday next the Members, Associates, and Graduates may well congratulate themselves upon the continually increasing utility and prosperity of which the Association can boast. The business of the session will be opened by Mr. George B. Bruce giving a brief account of the Northern Pacific Railroad—the opening of which he attended as the representative of the Institution—and among the subjects likely to occupy the early attention of the members are:—"The Adoption of Standard Forms of Test-Pieces for Bars and Plates." By William Hackney, B.Sc., Assoc. M. Inst. C.E. "The New Eddystone Lighthouse." By W.T. Douglass, Assoc. M. Inst. C.E., and "On Electrical Conductors." By W.H. Preece, F.R.S., M. Inst. C.E. In addition to this the educational lectures which gave so much satisfaction to all who have the privilege of attending them last session will be continued this, and it may even be anticipated that the coming series, treating of Heat in its Mechanical Application, will prove of even greater general interest than the series of Electricity given last year. The delivery of these lectures will extend from the present time until April next, and during the course the General Theory of Thermodynamics, by Prof. Osborne Reynolds, F.R.S.; the Generation of Steam, and the Thermodynamic Problems Involved, by Mr. W. Anderson, M. Inst. C.E.; the Steam-engine, by Mr. E. A. Cowper, M. Inst. C.E.; Gas and Caloric Engines, by Prof. Fleeming Jenkin, F.R.S.S. L. and E., M. Inst. C.E.; Compressed-Air and other Refrigerating Machinery, by Mr. A. C. Kirk, M. Inst. C.E., and Heat-Action of Explosives, by Capt. Andrew Noble, F.R.S., M. Inst. C.E. Members, Associates, and Students have the right of personal admission and every Corporate Member can introduce one friend.

It need scarcely be remarked that the vitality of an Institution such as that now under consideration is usually measurable by the readiness with which individual members make known to their colleagues the discoveries which they have made, and the information they have gained in the course of their practical experience, so that the secretary—Mr. JAMES FORREST—is fully justified in saying, in his circular to the members, that as mechanical science, which it is the object of the Institution to promote and advance, particularly in its application to civil engineering, is expanding every day, the members should evince their appreciation of this fact by contributing such original communications, for reading and discussion at the ordinary meetings, as will lead to the Institution of Civil Engineers maintaining its ground as the representative body of the profession. As indicative of some of the topics likely to receive consideration, attention is directed to a number of subjects, the discussion of which could usefully be opened by well considered papers. Amongst these are:—1. The comparison of the decimal and duodecimal systems of measurement for engineering purpose.—2. Improvements in instruments for surveying and levelling.—3. The strength and stiffness of long struts.—4. The strength of pin-joints.—5. The various systems of brick-making by machinery.—6. The qualities of metal for various purposes.—7. Iron foundry practice as regards melting, with the results obtained from various forms of cupola, pressures of blast, &c.—8. Brass foundry practice, furnace, melting mixtures, &c.—9. Improved methods of moulding with precision, especially by machinery.—10. The effect produced on the mechanical and other properties of steel by tempering in oil and in water.—11. Gaseous fuel, and its influence on smoke abatement.—12. The constitution and destructive distillation of coal, and the residual products of gas-making.—13. The type of steam-engine best adapted for ordinary factory purposes, in respect of economy in first cost and in cost of working and maintenance.—14. Railway construction in the United States and in Canada.—15. The application of the compound principle to locomotive engines.—16. A record of locomotive performances as regards weight, power, consumption, and dynamometer returns.—17. On measures for improving the efficiency of railways.—18. Mechanical power on tramways, including steam, compressed air, electricity, cables, &c.—19. The works carried out on the continent of Europe and in North America for the improvement of rivers, and of inland navigation generally.—20. Maritime canals and ship railways.—21. The comparative cost of transport by land and by water.—22. The stability of ships.—23. The present state of marine engineering.—24. Vessels for inland navigation, with the mode of working them by sternwheels, propellers, &c.—25. The manufacture of steel-faced armour-plates.—26. The sewerage of towns on the separate system.—27. The methods and appliances for blasting rock under water.—28. The comparative merits of water and of compressed air in driving tunnels under estuaries and through mountains.—29. The transportation, storage, and shipment of grain.—30. Improvements in the mechanical engineering of collieries.—31. The methods employed in securing large and irregularly-shaped mineral workings; for example, the Almaden Mines, the Great Comstock lode, &c.—32. Gold-quartz stamping and amalgamating appliances.—33. The manufacture of lead and the extraction of silver.—34. The methods and machinery employed for separating the impurities from coal, as carried out in South Wales in connection with the manufacture of coke for the iron and steel trades.—35. Large-bore naval and coast-battery ordnance, and the form of projectile best adapted for range, penetrative power, and general useful effect.—36. On electrical conductors.—37. Electro-motors: their construction, efficiency, and power.—38. On gearing for dynamo-machine motors, and other high-speed machines.—39. The transmission and distribution of electricity over large areas for lighting and for motive power, including electric railways, hoists, &c.—40. Electrical measuring instruments.—41. Submarine telegraph cables, their manufacture, laying, and repair, including deep-sea sounding methods and appliances.—42. Telegraphage or the automatic electrical transport of goods and passengers.—43. The measurement of work by dynamometers, with descriptions of the apparatus.

Apart from the advantage derivable by the reader of a paper from comparing notes with others who have had, perhaps, greater experience than himself in the same direction, it cannot be doubted that to be the author of a laudatory paper at once gives him a rank in the profession which might require years to attain in any other way. In this respect the Institution of Civil Engineers are particularly well provided with premiums, prizes, and other recognitions of considerable value, whether regarded as honours or for their intrinsic worth. For original communications upon the subjects just named the Council will award various premiums arising out of special funds bequeathed for the purpose, such as the Telford fund, with accumulations of dividends, produces 260*l.* per annum, the Manby donation of the value of about 10*l.* a year, given to form a fund for an annual premium or premiums for papers read at the meetings; the Miller Fund, bequeathed by the testator "for the purpose of forming a fund for providing premiums or prizes for the students of the said institution, upon the principle of the 'Telford Fund.'" This fund (with accumulations of dividends) realises 150*l.* per annum. Out of this fund the Council have established a scholarship—called "The Miller Scholarship of the Institution of Civil Engineers"—and are prepared to award one such scholarship, not exceeding 40*l.* in value each year, and tenable for three years. In addition to these there is the Howard bequest of about 16*l.* per annum for presenting periodically (the next presentation will be in 1887) a prize or medal to the author, being a member of the Institution, of a treatise on any of the uses or properties of iron, or to the invention of some new or valuable process relating thereto. The Council will not make any award unless a communication of adequate merit is received; but will give more than one premium if there are several deserving memoirs on the same subject. In the adjudication of the premiums no distinction will be made between essays received from anyone connected with the Institution (except in the cases of the Miller and Howard bequests, which are limited by the donors), or from any other person, whether a native or a foreigner.

Nor are the Council and Members of the Institution of Civil Engineers at all jealous of similar societies—all that is intended to promote the welfare of the profession willingly aid to their utmost. The Council have again granted the free use of the rooms of the institution for the meetings of other societies dealing with branches of engineering, as under:—The Mechanical Engineers (founded in 1847) on two days in January and two days in May; the Meteorological Society (1850) on the third Wednesday in each month; the Gas Institute (1863) on three days in June; the Iron and Steel Institute (1869) on three days in April; and the Telegraph Engineers (1871) on the second and fourth Thursdays in each month. By the courtesy of the respective societies, all the members of the Institution of Civil Engineers are invited to attend on these occasions; so that a member of the institution has really greater advantages than the member of any other. It is not too much to say that the prosperity and importance of the Institution of Civil Engineers is in a great measure due to its liberality and the excellence of its management, and that these have secured the good wishes and respect of every enlightened man in the kingdom.

PROPOSED MINING AND SCIENCE COLLEGE FOR SOUTH WALES.

The people of South Wales are to be congratulated upon the success which has attended their efforts to get Government recognition of their claims to higher education. For many years successive Governments turned a cold shoulder to their frequent appeals for help, and refused to recognise the justice of any demands made upon the national purse for the better education of the inhabitants of the Principality. It is a long lane, however, which has no turning; and the truth of this proverb has been verified in the case of Wales. Last year the Government sanctioned a grant of 4000*l.* a year each to South and North Wales for educational purposes, and this subsidy, small though it be, so stimulated the residents and friends of the Principality, that already the College for South Wales has been opened in Cardiff with about 100 students, and the College for North Wales is in a very forward state, and will be formally opened in the course of a few days. This, so far as it goes, is a decided step in the right direction, and the general higher education of the people of the Principality will undoubtedly receive a much wanted stimulus, which will be productive of the greatest good.

It would, however, be idle to attempt to deny the fact that Swansea and the whole of the western part of South Wales feel sorely disappointed at not having the college established nearer the centre of the coal basin and the great metallurgical and other industries of the district. Nor will any but the most zealous partisan of the Cardiff College contend that that establishment will supply adequate facilities for the mining and scientific education of the people. One of the first essentials to a successful mining and scientific college is, that it should be situated within easy reach of colliery operations and metallurgical manufactures, so that the pupils may have practical lessons at the works for the study of their various departments. Cardiff is far too remote from the centre of large works to afford such valuable advantages, and, therefore, a pretty general opinion prevails that the present is a most opportune moment for establishing a Mining and Scientific College at Swansea for South Wales. The Swansea Grammar School is a most valuable educational establishment, having a large and increasing endowment fund in the shape of mineral rents, and the suggestion is that the proposed Mining and Scientific College should be an annex to the Grammar School, a proposition which, if carried to a successful issue, would be most advantageous to all parties.

That South Wales urgently requires such means for the technical education of her sons cannot be doubted for one moment. With the single exception of the Clyde basin the South Wales coal basin is the largest in Great Britain, spreading over some 900 square miles in the counties of Glamorgan, Carmarthen, Pembroke, and Monmouth. The Royal Commission which investigated its extent and workable area some 10 or 12 years ago, reported that it contained, within 4000 ft. of the surface, no less than 31,783,000,000 tons, and taking a fair average working consumption, it would last some 2300 years. By far the richest portion of this deposit lies to the westward, and includes part of the celebrated Rhondda and Afan Valleys. There are about 550 collieries within about 40 miles of the port, exporting about 1,000,000 of tons annually; whilst the patent fuel works turn out about 200,000 tons. So much, then, for the coal measures. With regard to the metal manufactures and other staple industries, Sir HUSSEY VIVIAN, M.P., recently stated that "Swansea was the centre of the metal trades of the kingdom," and he had ample grounds to justify this remark. Within about 20 miles of the town there are about 40 ironworks, and several of the largest steelworks in the kingdom. Within a radius of three miles of the Swansea post-office there are about 40 tin-plate mills capable of turning out some million boxes annually. Swansea has, from time immemorial, been regarded as the chief seat of the copper trade in the kingdom; the words of Prof. PHILLIPS that, "of the entire make of copper in Great Britain, fully nine-tenths are smelted in the Swansea district," still holding good. Swansea has also extensive zincworks, silver works, nickel works, cobalt works, chemical works, &c.; in fact, metal and mineral works of almost every description are established within a few miles of Swansea, employing thousands of hands, and expending an annual capital exceeded by but few manufacturing districts in the kingdom.

We have mentioned these facts simply to show how necessary and how valuable a Mining and Scientific College would be for South Wales generally, but Swansea particularly, and what advantages and facilities exist for the success of such an institution. There is now nothing worthy of the name throughout the whole South Wales district, and the result is that consequent upon the absence of this technical and scientific teaching, many of the most lucrative offices in the works are held by German and continental professors. Several of the principal merchants and manufacturers of Swansea recently offered very large sums in support of the South Wales College if located in their midst; but Cardiff having now been selected as the site of that establishment, they have not felt called upon to remit their promised contributions. It is felt that if a Mining and Scientific College was established in connection with the Swansea Grammar School they would gladly forward to such institution their promised

subscription. The great metal manufacturers of the district would also undoubtedly liberally contribute to such an excellent movement, seeing how beneficial it would prove to the best interests of their own works. The present, therefore, is a most opportune time for a determined effort to be made now that a general feeling in favour of advanced education pervades all classes. The movement, as it appears to us, possesses every element of success, and we make these remarks on behalf of the great mining and manufacturing industries of South Wales in the hope they will stimulate the exertions of the promoters of the movement, and lead to success in the not distant future.

THE CONSUMPTION OF AIR IN MINES.

It would appear that no rule has been laid down as to the quantity of air necessary for ventilating mines of different capacities, consequently sometimes as much air is sent into a mine employing 200 persons as there is into one in which twice that number are constantly engaged. Yet in a scientifically ventilated mine a certain amount of air should be allowed for each person working underground as well as for each light and horse, and also for various other purposes. In some mines, of course, more air will be required than in others, for in those where there is no escape of fire-damp and little of any other mineral gas, about 120 ft. per minute for each man and boy may be taken as the minimum quantity for sanitary purposes alone; but where there was gas given off in considerable quantities nearly twice that quantity should be allowed. An eminent authority in the evidence given by him before a Select Committee, on being asked as to what quantity of air he would be satisfied with in the pits under his management, replied that much would depend upon the requirements of each. In a mine which yielded no fire-damp, with 120 or 130 persons in it, he should require from 200 to 230 ft. for each per minute, if properly conveyed up to the face of the workings, and made to sweep those districts where the people were employed; but in a fiery mine he should require very much more than the quantity named. Now, as one of the mines where an explosion took place recently employed nearly 400 persons during the day, it will be seen what a vast quantity of air is necessary to render such a place thoroughly ventilated. To effect this one simple regulation should be unremittably carried out by the officials—no person should be allowed to work in a stagnant atmosphere, whilst the working places and goaves which are the reservoirs of all the deleterious gases brought along by the air-current, should have a plentiful supply of air sent through them into every part, so as to dilute them and deprive them of their power.

But in calculating the quantity of air that should be sent into a mine, there are several other things that have to be taken into consideration besides the mere breathing of the workers and the consumption of oxygen by the lights. For instance, in all excavations in which the air is renewed, and in the galleries of mines in particular, carbonic acid gas is continually found, in quantity more or less considerable. According to circumstances, therefore, it is necessary that the ventilation should be sufficient to draw it constantly away, and to keep that quantity, which is mixed with the air in all parts of the workings beneath that limit beyond which it would become injurious to the health of the workmen. In fact, the displacing of the carbonic acid gas requires a good deal of fresh air, whilst the diluting of the nitrogen requires a great deal more. Mr. RICHARDSON, who paid a great deal of attention to the subject, estimated that the quantity of air required for vital chemical purposes was upwards of 1000 cubic feet per hour. Of this 84 cubic feet was for the breathing of each person, 62.8 for displacing carbonic acid, 258.4 for diluting nitrogen, and 27.0 for displacing perspiration. In addition, however, 59.3 ft. should be allowed for the combustion of each light, and 517.0 for one-fifth of that needed for a horse.

This is not looked upon as an extravagant estimate, for it has been held by some that it does not quite provide for diluting the gases to a point where they would be no longer injurious, nor for removing the air after it has been breathed, especially when a number of men are working at a continuous face of rock. The slow diffusion of the gases, too, should also be considered, and the varieties of impurities, and the knowledge that hard work is going on in a room of the lowest possible height. By some modes of ventilation there are contrivances for enabling men to breathe over and over again the same air, and so accumulate nuisances—and this is the case more especially in mines that do not give off gas. But such things should not be tolerated at the present time in any district. But in mines giving off gases in large or small quantities there is now no difficulty in providing air in sufficient quantities as to dilute them and render them harmless.

But, as we have before stated, the quantities of air sent into most of our mines is forced through the workings indiscriminately and without calculating the number of persons that have to be supplied with it. But in this notice we have endeavoured to give an approximate idea of what should be provided for different purposes, and according to the number of persons employed. Where the furnace is the system of ventilation adopted, it has been calculated that the cost of ventilating the most difficult mines, and where there is a large escape of gas, need not exceed a penny per day per man; and in mines where little or no gas was given off it would not be half so much. The fan, however, is fast superseding the furnace, and the cost by that system should certainly not be so great, although, of course, the first outlay is heavy. The air in a mine can also be largely increased by judiciously splitting or dividing the currents whilst by having several splits the air is brought much purer and cooler to the miners.

THE MINES REGULATION ACT.

Great as are the opportunities which the majority of the readers of the *Mining Journal* affected by the Mines Regulation Acts have of acquiring an intimate knowledge of their provisions, and of their duties and responsibilities under them, there are many points upon which differences of opinion will exist as to the exact interpretation which would be upheld by the Courts, so that a systematic reference to the decisions which have been given upon a special branch of the Acts will be of general interest. The question of offences under the Acts has been discussed (though by a very loose and careless writer, who infers that the cases of *Stokes v. Mellor* and *Frechville v. Loudon* were guided by the same Act of Parliament) in the last number of the *Justice of the Peace*, and whilst the article contains many details which are worthy of consideration it will certainly be admitted by all legal authorities that the plea of reliance upon such *dicta* would amply explain the serio-comic decisions which the "great unpaid" sometimes give. The article refers to the Mines Act (*sic*), and it is inferred in the first paragraph that it is 36-37 Vic. c. 76 that is intended; indeed, no other Act is mentioned throughout; yet near the end of the said article the writer has tumbled into another Act without knowing it—sec. 23 of cap. 77, and not of cap. 76, being that to which he ought to have referred. Such little inaccuracies are, of course, excusable among civilians; but in a legal article intended for legal (?) readers such misdirection is calculated to cause unnecessary inconvenience to both plaintiffs and defendants, who may be unfortunate enough to take the J.P. as their counsellor and guide. Apart from the inaccuracies, however, the article contains much that is useful to be known, though some of the cases cited are so old that they are almost forgotten by practical men.

The owner as defined by the Coal Mines Regulation Act is so well understood that the definition need not be repeated; but it is not always so easy to determine the respective actions which bring a man within the category of agent or of manager. In the well-known case of *Stokes v. Mellor*, the latter was managing director of a limited company in London working a colliery in Warwickshire, and had corresponded with the Inspector as to the appointment of a new manager; inflammable gas was found in the pit, and no competent fire-trier. The justices held that *Mellor* was not an agent within the meaning of the statute; but the Queen's Bench Division held that he was an agent and liable. In the case of *Evans v. Mostyn* the Inspector laid an information against *Mostyn*, the lord of the manor of Mold, for leaving a shaft of a mine in the manor unfenced, and in a dangerous state and condition. The lord

of the manor was owner in fee, and was entitled to the surface rights incidental to working and getting the materials. He had deeded the mines to a company for 21 years, and the company were in possession, though not working the mine. The shaft in question was close to a turnpike road. The Common Pleas Division, on appeal, held that MOSTYN, the landlord, was liable to fence the shaft. In WYNNE v. FORESTER the question as to who was liable for the ventilation of the mine was involved. The respondent FORESTER, as agent, and HOLLINS, as manager, were summoned for not causing an adequate amount of ventilation. The Inspector in October, 1878, had visited the mine and found the ventilation deficient, the defect being caused by a fall in the roof of the mine. He gave directions to FORESTER to have the same remedied, but nothing was done. The agent acted twice a week in the absence of the manager. The justices convicted the manager, but dismissed the case against the agent. The High Court held that the agent ought to have been convicted also. Mr. Justice LINDLEY said the 51st section made it an offence in the owner, agent, and manager if there has been an infringement of the general rules by some other person. That seemed *prima facie* to be unjust, but the Legislature relieved that by saying that if they can show that they have taken means to the best of their power to enforce the rules they shall not be liable.

In connection with the construction of the Special Rules the case of HAYWOOD v. BAKER is interesting. HAYWOOD had been convicted of having, in his capacity of engine-man, neglected to observe one of the general rules. The rule was to the effect that the engine tender shall not allow any person to be in the engine-house for any purpose, and shall not leave his engine without the authority of the owner, agent, manager, or colliery engineer. It appeared that while men were in the mine below, and the appellant HAYWOOD was the engine-man, a boy named SHORE was in the engine-room oiling the engine, and when so engaged he was caught by the fly-wheel and killed. The colliery engineer had given permission to SHORE to oil the engine. HAYWOOD was convicted and appealed to Quarter Sessions, and the conviction was quashed on the ground that the colliery engineer had power to give SHORE authority to be in the engine-house. A case being stated the High Court reversed the Quarter Sessions, holding that the engineer was not to allow a third person to enter for any purpose. In HIGHAM v. WRIGHT, WRIGHT was summoned for violating a special rule which forbade any coal-miner to go up or down into the pit contrary to the direction of the banksman or hooker-on. WRIGHT, being summoned, contended that the refusal of the hooker-on was an illegal act, for that he, WRIGHT, was entitled by the contract at any moment to discharge himself. The Justices dismissed the summons; but the High Court held that WRIGHT had not ceased to be a person employed in the mine, and was bound by the rules to have the hooker-on's sanction. He ought, therefore, to have been convicted.

The case of FRECHEVILLE v. LOUDON, though somewhat similar, comes under the companion Act. The Inspector summoned LOUDON and other miners for riding in a ship without a sufficient cover overhead when being raised in a working shaft of the mine. In order to make this offence intelligible it is to be borne in mind that sec. 23 of the Metalliferous Mines Regulation Act embodies general rules nearly similar to those in sec. 51 of the Coal Mines Regulation Act. One day the man-engine was at work, and the ship was at the bottom of the shaft, also at work, and the miners gave the signal and ascended in the ship, which was dangerous, having no cover. The Justices refused to convict, being of opinion that the section did not apply to the miners, but only to the agents of the mine; the High Court, however, said that it was a mistake to suppose that the miners were not equally liable with the agent in neglecting the direction of the statute, and so the case was remitted that the men might be fined.

TREATMENT OF CUPRIFEROUS ORES OF THE PRECIOUS METALS.

In an exhaustive report upon the Stella Mines belonging to the Isabelle Gold and Silver Mining Company Mr. C. H. Aaron gives some interesting details with regard to the treatment of cuprififerous ores of the precious metals. The ores carry gold, silver, and copper in enargite, the assays showing from \$3 to \$12 gold, and from \$15 to \$71 silver, all being rich in copper, and Mr. Aaron says—"In a mine of this character the ore is almost necessarily taken out in the very act of discovery; it must be followed through all its irregularities and ramifications. Hence it is not possible to estimate the quantity of ore which can be certainly got. None is blocked out in advance by means of levels, winzes, &c. I regard as favourable indications—the evident continuity of the chute which may extend to any depth, the re-discovery of the characteristic "diamonds" in the new ore body, the presence of crystalline quartz which I had not observed above, the presence of pyritous quartz porphyry in large quantity, the seam of ore-bearing clay to the westward of the chute, which is by some regarded as the footwall of a fissure vein, which however I should not at present like to affirm. In conclusion, you have in sight on the lower level something which if found near the surface of the ground in a new place would be looked upon as a very good prospect, worth a large sum of money. No sane person would dream of abandoning such a prospect, the value of which is enhanced by the past record of the mine. The chute should therefore be followed. For the present this can be done without great inconvenience from the 220 ft. level, but in order to work to the best advantage, and to properly test the value of the mine, the hoisting shaft should be sunk at least 100 ft., when if the chute continues its present course the distance to be drifted in order to reach it will be small. There is some hope that the clay seam may develop a body of good ore, possibly a true vein. This would also be ascertained by sinking the shaft, which would reach the seam within the depth named if the seam is continuous.

In the reduction works they use Stewart's modification of the Hunt and Douglas. The process is quite suitable for the ore. The original Hunt and Douglas process consisted in treating an (artificially or naturally) oxidised ore of copper with a hot solution of proto-chloride of iron, by which the oxide of copper was converted into proto and di-chloride of copper, with simultaneous formation of hydrated sesquioxide of iron. Salt was added to the bath to dissolve the di-chloride of copper, which is not soluble in water. The solution of copper thus obtained was passed over, or allowed to stand on a quantity of metallic (scrap) iron. The copper was thus precipitated, being replaced in the solution by the iron. The thus regenerated solution of proto-chloride of iron was again used on a fresh quantity of ore, and so on continually.

The advantage of this over earlier processes, in which the ore was treated with dilute sulphuric or hydrochloric acid, or with a solution of per-chloride of iron, or again by roasting sulphurous ores to sulphates or chlorides, consisted in the lesser consumption of iron for the precipitation. This was due to the fact that a large proportion of the dissolved copper was in the form of di-chloride, from which a given quantity of iron will throw down twice as much copper as from the proto-chloride or from the sulphate. Silver was regarded as merely incidental, and was to be chloridised in the roasting of the ore or by the action of the copper chlorides produced in the process. The chloride of silver was to be dissolved together with the copper, and precipitated in metallic state by means of plates of copper (or cement copper) before the precipitation of copper by iron. When an ore contains a considerable proportion of silver the solution of the whole of it is not convenient on account of the large quantity of bath required. Gold, if present, is not dissolved in this process, but remains metallic all through it.

Stewart's modification consists in so managing the bath as to dissolve as much as possible of the copper with as little as possible of the silver, and thus obtaining the latter together with the gold by amalgamation. Without amalgamation the gold would be lost unless indeed some other process such as Plattner's were applied. In roasting the ore in such a manner as to chloridise the silver a portion of the copper is inevitably converted into oxide which without a solvent would be lost.

In this process the solvent is proto-chloride of iron. The obtaining of the silver and copper in mixed solution is the weak point in the Hunt and Douglas process and cannot be entirely avoided in that

of Stewart. This led Hunt to devise a much better process, based on Wöhler's discovery that sulphurous acid decomposes a solution of proto-chloride of copper, forming di-chloride of copper and free acid. Hunt has so modified this as to dissolve the copper, nickel, and cobalt from an ore leaving the gold and silver to be afterwards extracted, by amalgamation or otherwise. The whole of the copper is got as di-chloride, thus reducing the consumption of iron to the minimum. It has been suggested by some that there is no essential difference between the Hunt and Douglas and the well-known Augustin process. This is an error. The Hunt and Douglas is essentially a copper process, in which proto-chloride of iron is indispensable. The Augustin process is a silver process in which iron is carefully removed from the bath expressly to avoid dissolving the oxide of copper from the roasted matte.

SCOTCH PIG-IRON WARRANT MARKET.

Mr. W. WILSON (Glasgow, Nov. 8) writes:—"The warrant market has been quiet throughout the week, and the price steady. There continues to be a marked absence of speculative enterprise—so much so, that favourable circumstances, such as a reduction of production in Scotland, and a considerable decrease of stocks in Middlesbrough, have not even arrested the downward course of prices. Shipments for the week again compare favourably. A furnace has been put out at Muirkirk, reducing the number blowing to 104. 600 tons were taken out of store here last week, and 1032 tons at Middlesbrough. Business was done during the past week at the following prompt cash prices:—

Thursday, Nov. 1. 44/3½, 44/8, 44/11½	Friday, Nov. 2. 44/3½, 44/11½, 44/10½	Monday, Nov. 5. 44/11½, 44/10
Tuesday, Nov. 6. 44/3½, 44/4½	Wednesday, Nov. 7. 44/4½, 44/1½, 44/4½	Thursday, Nov. 8. 44/5, 44/1½, 44/3½
Price of Scotch Warrants, Nov. 5	1883. 1882. 1881. 1880.	
Furnaces in blast in Scotland do.	105 114 106 119	
Iron in store at this date	538,264 618,944 610,781 477,321	
Shipments of Scotch pig-iron for		
week ending Nov. 3	12,167 10,792 11,333 12,430	
Do. since beginning of year	553,789 547,809 497,426 591,608	
Price of Middlesbrough, No. 3, Nov. 5.	38/1½ 41/ 41/3 39/9	
Furnaces in blast Middlesbrough dist.	118 121 116 118	
Middlesbrough Iron Imported at		
Grangemouth, week ending	5,410 4,780 9,545 4,253	
Nov. 3		
Do. do. since beginning of year	229,533 204,680 258,664 218,881	

BOARD OF TRADE RETURNS.

The Board of Trade Returns for October and the 10 months ended October, show a slight improvement. The imports have again increased, and the export account has a trifling balance on the right side. There is, says the Times, an increase, however, not only upon the figures of October, 1882, but also upon the export returns for the month of September in the present year, so that the bottom in the depression of our trade would appear to have been reached. The total declared value of the imports for the month is 35,833,755*l.*, as compared with 34,152,015*l.* last year, an increase of 1,681,740*l.*, or about 5 per cent., and the total for the 10 months is 355,128,514*l.*, being an increase of 13,598,522*l.*, or nearly 4 per cent., as compared with the same period last year. The declared value of the exports for the month is 21,138,859*l.*, against 20,877,713*l.* in 1882, being an increase of 261,146*l.*, or 1·2 per cent., but a decrease of 102,222*l.*, or nearly ½ per cent., as compared with 1881. For the 10 months the value of the exports is stated to be 200,803,944*l.*, against 203,012,657*l.*, a decrease of 2,208,713*l.*, or a little over 1 per cent., as compared with the corresponding period of 1881; however, there is an increase of 4 per cent.

With regard to the iron and steel trade, it is to be regretted that it does not participate in the improvement. For the month the exports of iron and steel amounted to 2,477,544*l.*, against 2,910,876*l.* last year, or a decrease of 14·8 per cent., and the decrease in quantity is 57,200 tons, or 13·8 per cent. For the ten months the decrease in the total value of the iron and steel exports is 9 per cent., and in quantity 305,059 tons, or under 7 per cent. As compared with the corresponding period of 1881, however, there is an increase of 1,333,131*l.*, or 5·8 per cent. in value, and of 214,066 tons, or 6·6 per cent. in quantity. The decline for the month is 18 per cent. in pig-iron, 23·4 per cent. in bar and angle iron, 33·6 per cent. in railroad iron, 30·9 per cent. in iron wire, 0·4 per cent. in cast and wrought iron, 4 per cent. in hoop and sheet iron, 30 per cent. in old iron, and 11·6 per cent. in unwrought steel. The only item of increase is in telegraphic wire, but that shows an improvement of only 2 per cent. For the 10 months the percentage of decrease under most of the above heads is not quite so large, except in the case of old iron and unwrought steel, the former having declined nearly 50 per cent., and the latter 32·3 per cent. Cast and wrought iron, on the other hand, shows a fractional increase for the longer period. The total quantity of steel and iron exported for the month is 356,487 tons, against 413,687 tons last year, or a decline of 13·8 per cent.; while for the 10 months the total exports declined 305,059 tons, or about 8 per cent.; but, as compared with 1881, there is a small increase. The principal falling off in pig-iron has been with the United States and France; and in railroad iron to the United States (the decrease for the month being 17,951 tons, or 75 per cent., Spain, and Australia. There has been an increased trade in rails, however, with British East India, and Sweden and Norway; and America has also been a better customer for tin-plates and sheet-iron. The following are the figures:—

	October.	1883.	1882.	1881.
Pig and puddled	£470,289	£335,192	£4,350,557	£3,522,856
Bar, angle, &c.	221,893	189,424	1,905,915	1,685,920
Railroad	677,330	448,898	5,481,113	5,124,700
Wire	110,577	75,815	1,098,689	855,677
Telegraphic do.	43,154	44,281	1,010,848	1,009,215
Cast and wrought	411,710	409,461	3,787,848	3,823,843
Hoops, sheets, &c.	382,562	365,832	3,288,440	3,227,313
Old iron	29,367	20,545	411,804	265,005
Steel, unwrought	136,505	120,261	1,765,750	1,193,119

The figures relating to our copper exports show an increase of 24,718*l.*, or 7·5 per cent., having thus rather more than recovered the falling off in August. The increase is in wrought or manufactured copper and mixed yellow metal sheathing, which have improved 11·2 per cent. and 18·8 per cent. respectively. India has again increased her demand for the manufactured article, and is accountable for the increase, as well as for that in mixed or yellow metal sheathing. Unwrought copper fell off 19 per cent., owing chiefly to the less demand from France, and in brass goods there is a decline of about 16 per cent. The totals are as follow:—

	October.	1883.	1882.	1881.
COPPER AND BRASS	1882.	1883.	1882.	1883.
Unwrought copper	£109,582	£ 98,825	£ 749,650	£ 956,494
Wrought, &c.	111,586	134,424	1,096,573	1,009,572
Brass	43,354	36,162	357,933	384,869

Among the miscellaneous articles appertaining to the Midland district, the most noticeable items of increase are alkali 7·8 per cent., small arms 48 per cent., ammunition, 129 per cent., railway carriages 52 per cent., railway trucks 42·5 per cent., coals 5·3 per cent., cordage and twine nearly 16 per cent., machinery 5·3 per cent., steam-engines nearly 24 per cent., ribbons 35·6 per cent., salt 3 per cent., and soap a little over 19 per cent.

TIN TABLES.—Although involving only the application of ordinary compound multiplication, the performance of the calculation necessary to ascertain the value, for example, of 7 tons 13 cwt. 3 qrs. 19 lbs. of black tin at 29*l.* 17s. 6d. per ton presents to many almost insuperable difficulties; not only is the process itself long and irksome, but the operator is by no means certain of the accuracy of the result when it has been obtained. The calculation of the price of tin ore at a given standard and produce presents similar obstacles. Appreciating the importance of enabling every seller to calculate for himself, and thus be satisfied that he is receiving the agreed price for his mineral, the late Mr. R. Wellington, whose name was well known to the readers of the *Mining Journal*, prepared two useful little ready reckoners—the one showing at a glance the value per ton of black tin of a given standard and produce, the other the value of a parcel of tin ore up to 10 tons in weight at any price

from 20*l.* to 90*l.* per ton. These books, which have long been out of print, and were sold at 7s. 6d. each, have now been revised, extended as regards the second table to 100*l.* per ton, and bound into one volume, reprinted by Mr. W. Bailey, of Camborne, and will be forwarded from the *Mining Journal* Office on receipt of remittance of 7s. 6d. To show the applications of the tables let it be supposed that it is required to know the value of ore of 11½ produce at 54s. 6d. standard, it is simply necessary to refer to the first table, and turning to the heading 11½ produce carry the eye down the column until the amount 54s. 6d. in the standard column is reached, opposite to which will be found 30*l.* 19s. 11d., the value sought. In the same way, to ascertain the value of the parcel of black tin first mentioned, it is simply necessary to turn first to the page headed 29*l.*, and then to that headed 17s. 6d., and add the several lines together, thus:—

In 29 <i>l.</i> page	7 tons	£203 0 0
	13 cwt.	18 17 0
	3 qrs.	1 1 9
	19 lbs.	0 4 11
In 17s. 6d. page	7 tons	6 2 6
	13 cwt.	0 11 4
	3 qrs.	0 0 7
	19 lbs.	0 0 12

the sum of which is 229*l.* 18s. 4d., which is as accurate as need be desired. To miners, tributaries, and all having anything to do with the buying and selling of tin ores the tables will prove a great boon; they are well and carefully printed, and appear to be thoroughly reliable.

THREATENED STRIKE OF MINERS.—During the last few days the miners in the West Riding have given notice for a 15 per cent. advance, and that the existing contracts terminate in a month; but there is a strong feeling that when the critical moment arrives some means will be adopted to back out of the strike itself. The colliery owners appear determined not to make any concession whatever, seeing that the present state of trade will not admit of it. Wages in Derbyshire and the West Riding are not so exceptionally low as miners would have the public believe. They are 20 per cent. at least higher than in Staffordshire, Gloucestershire, North Wales, and many other of our coal mining districts, and it has been suggested that the miners' leaders would be much better employed were they to endeavour to raise the wages of the miners in the more poorly paid districts.

MINING PROGRESS IN SPAIN.

Recent information from the mining districts of Carthagena, Portman, Aguilas, and Marbella tends to show continued demands, and that the amount of iron and iron ores fully equals, if it does not exceed, the exports of previous years. It is reported that works for a railway along the coast from Malaga to Algeciras will shortly be begun, a concession held for that purpose by Señor Casado having been transferred to an English company. The construction of a railway from Bobadilla to Ronda and Algeciras, under the auspices of Señor Carvajal, is also spoken of. These lines, if constructed, would place Gibraltar in easy communication with this part of the Spanish Peninsula, whereas one is now mainly dependent on irregular and uncertain arrival and departures of steamers, the road by the sea-coast being at times almost impassable. Proposals are also stated to have been made by a banker, M. Fillen, for the construction of a railway from Linares to Almeria, under guarantees of 6 per cent. interest on 60,000,000 of pesetas or francs, for 20 years, from the provinces of Almeria, Granada, and Jaen.

From Aguilas, in the province of Murcia, Vice-Consul Naftel sends a report for the past five years. Since his last report dated Feb., 1878, the harbour works, breakwater, &c., undertaken by a French company, have progressed favourably, and a large part of this port is protected in about 6 fathoms of water, but still not sufficiently so to benefit the esparto-loading vessels in the centre of the bay. In two years' time the quays, breakwater, tramways, &c., will be in all probability entirely finished. Two reals per ton on everything shipped is now paid to the company excepting iron ore, which pays less, as it is usually loaded out of the port itself. Exports have not improved much during the last five years, but stand about the same.

The iron ore shipped to Great Britain, France, and Belgium from 1878 to 1882 inclusive, amounted to 27,800 tons, and there is no doubt that the very numerous deposits in this district could compete most favourably with others in this coast where the means of transport to the shore increased, as the carriage at present swallows all margin, owing to the long distance, bad roads, and slow mode of travel, which, however, in a few years will be remedied by tunnels, trams, and other improvements now in course of construction.

Great improvement is noticeable in the lead trade, and very large deposits are being worked in this neighbourhood. The French company who have large smelting works here have shipped since 1878 about 10,500 tons, all for France, and are extending their works and taking up new mines daily. This bar lead yields an average of 3½ ozs. of silver per cwt. In the Lomo de Bas an English company have been at work already some time boring for lead with Liverpool appliances, and their works are rapidly progressing. A German society are also there with the same object, and we may confidently look for important productions from that quarter ere long.

Owing to the state of the markets at home, the extensive quick-silver works at Aguilas belonging to English firms have entirely stopped, although the mines are very rich. Sulphur continues to be shipped in considerable quantities to the Catalonian and Galician provinces, and new foreign machinery has been brought to Lorca for its manufacture, but it is not sent abroad. The Sicilian sulphur outdoes it. Other exports, such as fruit, barley, straw, &c., are not of sufficient importance to mention, and are principally for the opposite coast of French Africa. Imports of coal and coke are now increasing, and in 1882 reached 6200 tons, and must naturally continue to rise with the extra smelting furnaces now being set up, and the new machinery labour in the Sierras.

For the last three years much has been talked of and great things expected in connection with railways, and at length a line from Aguilas to Lorca, the nearest large town (of some 30,000 inhabitants), has been commenced, and by the middle of next month the works will be in full swing. In two years' time it will be finished, and Aguilas will then be in direct communication with Lorca, Villarricos, Herrerias, Jarosa, Beda, and all the best mineral-producing districts in the neighbourhood of the well-known Sierra de Almagrera, from which we have hitherto been almost cut off by the difficulties of travel, caused by the neglected state of the bad roads and the hilly nature of the country; in fact, it will be an immense boon to us.

The lead mines of Almeria have greatly diminished in produce, and as most of them send their ores to Adra, Garrucha, Palomares, Villarricos, &c., what remains for export by this port is a small share of the produce, and considerably less than it used to be some years ago. Nevertheless, the export may be calculated per year at about 2500 tons of silver-lead and 1790 tons of soft quality, which was the quantity shipped last year, with an average value of \$400,000, and the greater part of this lead goes to England. Some very important mines of sulphur ore have lately been discovered, and are worked in this neighbourhood. The ore is very rich, containing from 50 to 80 per cent. of sulphur, which is easily reduced to pure sulphur, and finds a ready sale at about \$20 per ton on board here. The produce to-day may be put down at about 10,000 tons per year; but it is increasing every day, as the mines, as they are worked, show a larger produce. It is chiefly shipped to the Peninsula, and some of it to Marseilles.

The manganiferous iron ore produced in Almeria is of a very good quality, containing some 54 per cent. metallic iron and 4 per cent. of manganese, without any injurious matters, and it is the very ore to make the Bessemer steel. It is shipped principally to America and to France, but not in large quantities, because with bad roads and bad means of cartage it can only be brought from the mines near Almeria. The exports hitherto have been some 30,000 tons per year. There are some mining railroads in contemplation, which if made would increase the export of this ore by our port to a very large quantity, requiring a large amount of tonnage. Manganese ore is also produced, but in small quantities, and shipped at Cape d

Gatt. The production of zinc ore has greatly diminished in our province; there are a few cargoes made per year, and shipped to Belgium. The shipments of copper ore are not of importance, but what is shipped goes to the English markets. Salt, of a very excellent quality, is produced in the salt pits at Cape de Gatt, and is shipped to France chiefly.

MANUFACTURE OF ALUMINIUM.

The interesting communication to the London section of the Society of Chemical Industry by its President—Mr. Walter Weldon, F.R.S.—demonstrating the impracticability of reducing alumina by carbon, and the absence of novelty in the so-called Webster process, has been reprinted in pamphlet form, and contains an account of the only process which has hitherto proved successful for the manufacture of that metal, which will be generally acceptable to readers of the *Mining Journal*. On one part of the subject, says Mr. Weldon, I can speak with a little special knowledge; since apart from whatever, if anything, Mr. Webster may be doing in the matter the only manufacturer of aluminium in the world, so far as he or I can learn, is my very good friend Mr. Pechiney, of Salindres; while it so happens that I am the only Englishman who is in the habit of frequently visiting Mr. Pechiney's works, and seeing the various processes which are carried on in them. The process by which aluminium is manufactured at Salindres is the classical process which was worked out more than a quarter of a century since, under the auspices, and I believe mainly at the expense, of the late Emperor Napoleon III., by that most distinguished physicist and chemist the late Henri St. Claire Deville. That process consists of these three successive operations—(1) The preparation of alumina from bauxite, by furnacing the bauxite in admixture with sodium carbonate, dissolving out the resulting sodium aluminate, and then treating the solution so obtained by CO_2 ; (2) the preparation of double chloride of aluminium and sodium, by mixing with carbon the alumina obtained in the first operation, drying the resulting mixture of alumina and carbon, and then heating it in a current of chlorine; and (3) the reduction by free sodium of the AlCl_3 of the double chloride so obtained. There is no need that I should take up your time with any description of these three operations, since they are described with perfect accuracy in books which all those of the members present who have any special interest in the subject are certain to have in their libraries. Perhaps the best accounts of them are that given in the sixth edition of Payen's *Précis de Chimie Industrielle* and that in Wurtz's *Rapport sur l'Exposition de Vienne*.

It is to the cost of the three operations respectively that I wish to direct your attention. I am not free to state their actual cost, but I can state the cost of each in terms of the total cost of all three. If the total cost of a unit of aluminium at Salindres be called 100 the cost of the first operation, including that of the bauxite upon which it is performed, is 9.67, that of the second operation is 38.4, and that of the third operation, including the cost of the sodium used in it and also that of the cryolite employed as a flux, is 56.93. The first operation is thus comparatively inexpensive, the second operation costs two and a half times as much as the first, and the third operation costs one and one-third times as much as the first and second operations put together.

It follows that to produce aluminium at a cost appreciably lower than the present cost of aluminium at Salindres, either one must produce it by a process quite different from Deville's, or one must cheapen either the second operation of Deville's process or the third operation of that process, or both its second and its third operations; since to reduce the cost of the first operation even to nothing at all, the second and third operations of it remaining as costly as at present would cheapen aluminium only by 9.6 per cent.

How far, then, has Mr. Webster cheapened aluminium? He has not invented any new process for its manufacture. His invention relates simply to the obtaining of anhydrous alumina from potash alum. If his method of obtaining alumina were 50 per cent. cheaper than the Salindres method it would thus be capable of reducing the cost of aluminium only by less than 5 per cent; but his method is twice or three times as costly as the Salindres method. Towards the cheapening of aluminium, therefore, Mr. Webster has done nothing at all.

As yet, then, the only method known for the manufacture of aluminium is Deville's. Mr. Pechiney has improved and cheapened the modes of working and the appliances for carrying that method into effect; but this is all the progress which has been made in the manufacture of aluminium during the last 25 years.

Such being the present position of the aluminium manufacture, what are its prospects? I find that quite a considerable number of persons, quite independently of each other, are endeavouring to reduce alumina by carbon. It is often rash to say that a proposed thing can never be done, but that alumina can ever be reduced by carbon is surely as impossible as that two and two can ever make five or one foot-pound of energy be made to do two foot-pounds of work. When 2×27.3 parts of aluminium combine with 3×16 parts of oxygen there is liberated as heat a quantity of energy capable of raising 391,600 parts of water from 0°C . to 1°C . To abstract by purely chemical action the oxygen of the resulting alumina, leaving its aluminium free, one must cause to react upon the alumina a body by whose combination with oxygen more than 391,600 calories are liberated, and carbon is certainly not such a body.

If, then, we cannot hope to reduce Al_2O_3 by carbon or Al_2Cl_3 by hydrogen, in what direction can we look for the cheapening of aluminium? It seems to me that there are four conceivable resources. There are doubtless others, but all I can see are these:—1. The cheapening of AlCl_3 , 2NaCl .—2. The substitution for AlCl_3 , 2NaCl of some other anhydrous compound of Al, not containing oxygen. —3. The substitution for sodium of some cheaper reducing agent. —4. The cheapening of sodium itself. Mr. Pechiney has already effected important economies in the production of AlCl_3 , 2NaCl , and will probably effect others. The production of a cheaper haloid salt of aluminium than Na_2AlCl_4 would at first blush seem difficult, but is not I think impossible; and a cheaper agent than sodium, capable of reducing certain salts of aluminium, I believe that I could now indicate if I were free to do so.

As for cheaper sodium, sodium no doubt will be cheapened. To manufacture a ton of sodium at present costs roughly between 300*l*. and 350*l*. The quantity of sodium carbonate containing a ton of sodium at present costs in the market about 16*l*. The manufacturer of sodium, however, obtains only about a third of the sodium contained in his raw material. He effects only a partial dissociation of his Na_2O , and to that partial dissociation there succeeds partial reassociation. Still, three times 16*l*. for raw material leaves from 250*l*. to 300*l*. for the cost of extracting a ton of sodium from about 7 tons of Na_2CO_3 .

The largest item in this excessive cost of extraction is for the vessels in which the Na_2CO_3 is heated in admixture with powdered coal. It has not hitherto been found possible to heat the mixture of Na_2CO_3 and powdered coal to the necessary temperature except in cylindrical wrought-iron vessels of very small diameter, and these small wrought-iron cylinders are so rapidly destroyed that their cost stands for fully one-half of the present total cost of sodium, and for nearly one-third of the present total cost of aluminium.

There is surely room here for improvement, and the cost of sodium for this item will doubtless be diminished. Still one can hardly hope that sodium can ever become cheap enough to permit of aluminium reduced by sodium being largely applied to the many practical uses of which aluminium is capable. A cheaper reducing agent than sodium, and a cheaper artificial ore of aluminium than AlCl_3 , 2NaCl ; these I think are essential to aluminium becoming commonly and extensively employed.

WIRE CLOTH SCREENS.—The economy of the screens used in connection with the dressing of ores depending in a great measure upon the quality of the wire used, Messrs. R. JOHNSON, CLAPHAM, and MORRIS, of Manchester, have recently been turning their attention to the subject, and are now introducing an entirely new manufacture, of great importance to users of wire cloth for screening ores, sifting cement, and in fact for all purposes where perfect screening

is necessary. The improvement consists in hardening and tempering steel wire cloth after manufacture. The web, it need scarcely be remarked, is largely in use everywhere, its applications in various branches of industry being very numerous; but up to the present time it has never been hardened after manufacture. The process has been patented, and the web is found to last many times longer than the ordinary style of woven wire.

TREATMENT OF COMPLEX ORES, AND CONDENSATION OF LEAD FUMES—No. I.

The treatment of complex ores and the condensation of lead fumes have been for many years important problems in metallurgy; and in a paper read before the Institution of Civil Engineers—and now reprinted in the Other Selected Papers edited by the indefatigable secretary, Mr. James Forrest—Mr. J. W. Chenhall, A.M.I.C.E., gives the result of his own personal experience in dealing with them. He explains that complex ores belong to that class which, containing two or more minerals, cannot be separated by mechanical means (dressing), or by any of the ordinary smelting processes as pursued in copper smelting, lead smelting, or gold and silver works. The presence of zinc in copper or lead ore, even to the extent of 5 to 7 per cent., interferes materially with the reduction, and when present to the extent of 25 to 30 per cent. considerably deteriorates the value of the other metals contained in the ore, and in many cases prevents their profitable extraction.

In the case of copper ores the presence of zinc makes them infusible, and depreciates the quality of the copper, necessitating additional softening operations. Zinc will not combine with the silicious gangue of the ore until oxidised, oxidation taking place very slowly, even when the conditions are otherwise most favourable; but the conditions in the reverberatory copper smelting furnace are anything but favourable to the oxidation of the ore. Instances are known to the author of charges of copper ore remaining in the furnaces from 12 to 15 hours instead of 5 hours, the usual time for smelting, in consequence of the presence of zinc in the ore. Greater inconvenience still occurs from the presence of a large percentage of zinc in lead ores, as when the ordinary smelting processes are pursued not only are the operations impeded thereby, but there is also a considerable loss of lead through volatilisation, arising from the increased length of time the lead products are exposed to the action of the furnace fires; and further, ores of this complex character are not adapted to the use of the zinc or spelter manufacturer even when the percentage of zinc present is suitable for this process. From the peculiar nature of zinc smelting, which is conducted in earthen retorts, it is of essential importance there should be no element present which would readily destroy the retorts. Now, the presence of lead in zinc ore is most objectionable, as it speedily destroys the retorts. Purely zinc ores, containing less than 30 per cent. of zinc, are considered valueless in this country, although ores of much lower percentage are worked on the Continent, where labour is cheap; hence the necessity of resorting to some method of separating the zinc from the other metals before the ordinary smelting processes are pursued. The mechanical method of dressing is, however, always adopted whenever practicable. In ordinarily mixed ores containing galena and blende, the separation is easily accomplished by the great difference between the specific gravities of these two minerals; but in many cases separation by dressing is impracticable, and in others impossible; thus blende and copper pyrites resemble each other so closely in density as not to allow of their separation by dressing. Again, blende and galena are often so intimately mixed (forming apparently a homogeneous mineral) that their separation by dressing is too difficult to be practised on a large scale. The plumbiferous blende found in Anglesea, commonly known as bluestone, is of this character. Large quantities of copper ores are also obtainable, the working of which would be remunerative were it not for the injurious influence of zinc present in the ores, varying from 20 per cent. upwards—hitherto the highest prices paid by the copper smelters for such ores have been unremunerative to mining proprietors.

In February, 1877, Mr. Edward Andrew Parnell, of Swansea, took out a patent, No. 820, for improvements in the manufacture of metallic zinc and sulphuric acid, and it has been the development of that patent which has led to the successful treatment of the ores under consideration, the gist of which consists in the dissolving of oxide of zinc from calcined ore by sulphuric acid, and the after decomposition of the sulphate of zinc by sulphide of zinc or carbon. When heated alone sulphate of zinc requires a very high temperature to effect its decomposition. Such a method is impracticable on a large scale; but when mixed with a deoxidising agent sufficient to take one equivalent of oxygen from the sulphate, it is easily decomposed, the product being oxide of zinc and sulphurous acid. A mixture of two equivalents of sulphate of zinc with one equivalent of carbon, heated to dull redness, affords oxide of zinc. With a large proportion of carbon sulphide of zinc is produced. A like decomposition is effected by means of sulphide of zinc, whether native or artificial; but at a considerably higher temperature three equivalents of Zn SO_4 (sulphate of zinc), and one equivalent of Zn S (sulphide of zinc) produce four equivalents of oxide of zinc, and four equivalents of sulphurous acid ($3 \text{ Zn SO}_4 + \text{Zn S} = 4 \text{ Zn O} + 4 \text{ SO}_2$). Native sulphide (zinc blende) is the reducing agent preferred on the large scale for making oxide of zinc suitable for the manufacture of zinc or spelter.

In the treatment of the ores already described it is found expedient to divide them into two classes—those in the first class, which contain zinc in sufficiently large quantities for its extraction by Mr. Parnell's process, which should be from 15 to 35 per cent. of zinc; and those of the second class, which vary from 5 to 15 per cent. of zinc. It is proposed here to deal first with the classes of ores rich in zinc, and the poorer ones afterwards. The mode of treatment for the ores rich in zinc is, in the first place, to grind it sufficiently fine to pass through a sieve of six or eight holes to the lineal inch. This is accomplished by passing the large lumps of ore through a Blake's stone-breaker, and from thence through a Cornish crushing-mill, having two series of rolls, the upper ones being fluted on their faces, and the lower ones plain. The only point in this mill calling for special remark is the introduction of india-rubber buffers instead of springs or levers to allow the opening of the rolls during the passage through of the material, and to give the necessary pressure for crushing.

The next stage is to calcine the ground ore by exposure to air at a moderate heat; this is effected in muffled furnaces, 46 ft. in length by 15 ft. in width, outside measurement. The furnace is so constructed that the heated gases from the fire-place pass along above the muffled arch, and then descend at the opposite end of the furnace, traversing the flues under the working bed twice before their exit to the chimney flue; thus the products of combustion travel a distance of about 120 ft. before escaping to the chimney. There is no difficulty in keeping this furnace at a uniform heat throughout its whole length, with the consumption of about 13 to 14 tons of coal per week. It is of the utmost importance that the operation should be conducted at a moderate temperature to allow as much of the sulphide of zinc as possible to be transformed into sulphate of zinc in order to reduce the consumption of sulphuric acid in its after treatment; and, further, if the ore be calcined at a very high temperature the zinc is not so readily dissolved out; silicate of zinc and silicate of lead being formed produce a gelatinous silicate, which impedes the afterwashing of the ore, and delays the settling of the fine ore in suspension.

IRON MANUFACTURE IN FRANCE.—The ironworks erected by the Compagnie des Forges de St. Nazaire are now in full work, and give employment to about 1700 workmen. The quantity of rails, iron bars, and iron and steel plates to be manufactured this year will be from 60,000 to 75,000 tons, of the value of from 12,000,000 frs. to 15,000,000 frs. The machinery at these works is driven by 42 steam-engines of the combined force of 7600 horse power, of which about 3000-horse power is kept constantly in motion day and night. A considerable portion of their most powerful machinery has been imported from England. The quantity of coal consumed in the works is about 180,000 tons per year, all of which is imported from England. The firm of MM. Godard and Co. import 160,000 tons of large and

small coal, and 10,000 tons of pitch, and they manufacture about 70,000 tons of patent fuel at their works, which give employment to 200 workmen. Another company has been formed for the manufacturing of patent fuel on a very large scale. The ironworks at Basme Indre, some seven or eight miles below Nantes, produced during the past year nearly 8000 tons of bar and sheet iron and plates; they give employment to over 400 hands. A short distance below Basme Indre are the leadworks of Couéron, formerly the property of an English company, but now a joint Anglo-French concern. They employ some 450 hands, and during the past year produced—Lead, 7500 tons; silver extracted from same, 11 tons; lead piping, 1500 tons; shot, 400 tons; and sheet lead, &c., 800 tons.

Original Correspondence.

MURDOCK AND THE TREVITHICK MEMORIAL.

SIR,—It is no light matter to enter the arena with so distinguished a literary pentathlete as Dr. Hyde Clarke. But despite the profound respect I entertain for his rare mental energy and the extensive variety of his acquirements I am bound to state that I do not think he has succeeded—even on the special line of argument he has elected to follow—in proving the priority of Trevithick's claim to recognition in comparison with Murdock, as the father of the industry of steam propulsion in its application to wheeled vehicles. I possess a complete acquaintance with the history of Trevithick's successful development of the high-pressure engine up to the point at which it was simplified and improved by Blenkinsop, but especially by Hedley; and I cheerfully accord to the eminent Cornish engineer the fullest credit for giving practical effect, in a decidedly advanced form, to Murdock's invention. What I still venture to maintain, however, is—with all deference to my venerable and learned friend, Dr. Clarke—that the ideas which Trevithick embodied were derived from Murdock's working model and this inventor's personal exposition of the principles on which that model was constructed.

I am quite prepared to concede Dr. Clarke's self-evident assertion that the mere antecedece, in time, of an invention or discovery to an invention or discovery of a similar character, which has been introduced directly into permanent use, does not necessarily constitute the prior inventor or discoverer the founder of the industry which happens to result from the particular novelty invented.

Dr. Clarke has supplied several apposite illustrations of this proposition. He has reminded us, for instance, that the inflammable properties of carburetted hydrogen had been observed by Shirley, Lowther, Clayton, Boyle, Dundonald, Hales, and Watson within the century and a quarter preceding Murdock's investigations, without these predecessors of Murdock being entitled to the honour of having established gas as a lasting public and domestic institution. By parity of reasoning Dr. Clarke, if I correctly understand the point of his remarks, seeks to prove that Trevithick, as carrying steam locomotion on land to a stage never reached by Murdock in his model engine, sustains the same relation to the latter which Murdock did in gas exploration to the succession of original and independent observers who preceded him, as the founder of the gas industry. Nay, so precipitate does Dr. Clarke appear to be in compelling the attention of his readers to this as the right view that he is unconsciously hurried into ignoring every suggestive hint Trevithick is well known to have received from Murdock on the high-pressure engine, apparently aiming at conveying the impression that whatever light penetrated Trevithick's mind from previous inventors was derived from "Recueil des Machines." Surely he "doth protest too much" in glorifying his hero to the unintentional disregard of Murdock. The fallacy by which Dr. Clarke has been misled lurks in the fact that while there was no relation of dependence between Murdock's experiments in gas and those of the men who went before him in the same sphere. This could not be truthfully said of the work of Trevithick, which was simply an extension and development of Murdock's principle imbibed by the pupil from his master. It is irrelevant for the purpose of depriving Murdock of the paternity of practical steam locomotion on land to say that Cugnot invented a locomotive carriage in 1770, while Murdock did not run his model at Redruth until 1784. The answer is that Murdock was in no way indebted to the locomotive of Cugnot, because he was ignorant of its existence until after his own model was completed. Up to that period he had no guidance but what he obtained from Watt's engines.

This brings us to the chief consideration. Between Murdock, in 1792, and his predecessors in the study of the combustibility of gas, up to Shirley, in 1659, there are links, but these links are detached, having no connection or lineal dependence on each other—at least, as far as Murdock is concerned. The same may be said as to Murdock's position in reference to Cugnot's engine as affecting the elaboration of his own working model. But the case was totally different as regards Trevithick in relation to Murdock. *Appropos* of the Luther celebration, now in progress, it has been said by D'Aubigné, speaking of the Protestant Reformation, "Erasmus laid the egg, and Luther hatched it." So far the principle of Murdock's model engine was the germ deposited in Trevithick's mind which bore fruit first in 1804-5 on a railway in South Wales, and subsequently under the fostering care of Hedley and Stephenson in the vast railway systems of the civilised world. I have heard substantially this view expressed by no less an authority than Dr. Smiles, before an assembly largely composed of engineering experts, and nothing advanced by Stuart or Professor Pole can alter the fact that on the very mode of argument adopted by Dr. Clarke, Murdock is not only the founder of the gas interest, but the real father of steam propulsion as applied to wheeled vehicles.

I am perfectly aware that Murdock has earned enough laurels to bedeck his brow in the gas enterprise alone, and if other inventors had not been put forward to appropriate a distinction which is justly his in the sphere of steam locomotion I should be content to let his flagrantly-reglected claims to worthy commemoration rest exclusively upon his introduction of a splendid system of artificial illumination; but as the parent of steam locomotion on land it is exceptionally opportune that all civilised communities should combine at this moment to confer upon him a too-long-postponed honour. It will be exactly a century in 1884 since Murdock ran his pioneer engine on the road at Redruth—the source at which the fire of Trevithick's locomotive genius first kindled, his joint patent with Andrew Vivian not being taken out till 1802. Next year, consequently, will be the centenary of the birth of practical steam road locomotion, in the sense not simply of an invention, but of an invention which germinated. There is the virtue of "apostolical succession" in engineering as in ecclesiastical tradition, and Murdock was the "prince of apostles," an organic connection binding him with Trevithick as second in the canonical line of successors who have gradually developed and perfected, as locomotive engineers, what he initiated. It would only be becoming, therefore, that the railway companies should combine with the gas companies everywhere in celebrating in a fitting manner the originator of both their industries. An opportunity will be afforded towards the close of the present month for so doing, when a preliminary committee of influence will be formed to take the necessary steps for promoting this object. Already action has been commenced in the cause north of the Tweed.

It is sufficient to add that Dr. Hyde Clarke's statement respecting Boulton and Watt's omission to take notice that Trevithick and Vivian's patent had been forestalled by their foreman has not the slightest force as invalidating Murdock's right to the distinction of having started in Trevithick's mind the train of thought which ripened in the general adoption of the railway system. Murdock, unfortunately for his own advantage, was too unselfish to think of protecting his most important inventions by patent. He gave gas as a free gift to the world, and the same abandon to his art as an inventor made him similarly forget all about the desirableness of patenting his locomotive. But to the credit of Boulton be it said that he proposed to advance Murdock 100*l*. to prosecute his experiments in steam locomotion. There was an additional offer on the part of his employer. If within a year he should be able to complete an engine carrying two persons with the driver and 200 lbs. of

logage, fuel for four hours and water for two hours, to run at the rate of four miles an hour, a partnership in the enterprise should be struck with the proprietors of the Soho Works. But Murdoch, though confident of success, was so handicapped with daily responsibilities in superintending the Cornish engines manufactured by Boulton and Watt that he had not the requisite time to devote to the affair. The one barrier to Murdoch's material advancement was his genuine modesty, and a disposition to underrate his own achievements. Had he accepted the modern maxim, that as a rule, unless a man is a palpable quack, the world takes him at his own valuation of himself, he might have died a millionaire, and monuments have long ago been erected to his memory all over the world. But his worth, like the precious metals, did not lie on the surface, having to be rescued from threatened oblivion caused by his own retirement and self abnegation.—*Highbury, Nov. 9.* M. MACFIE.

THE COAL TRADE

Mr. J. R. Scott, the Reg. the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London, by sea, railway, and canal, during October, 1883:—

By Sea.	Ships.	Tons.	By Railway and Canal.	Tons.	cwt.
Newcastle	222	221,718	London & N.-Western	132,941	15
Sunderland	123	107,219	Great Northern	121,584	0
Seaham	28	19,412	Great Western	110,380	0
Hartlepool	42	19,412	Midland	217,541	0
Swansea	7	3,137	Great Eastern	65,637	19
Woolwich	32	27,133	South-Western	4,807	8
Yorkshire	22	4,250	South-Eastern	2,399	7
Small coal, cinders	13	4,370	Grand Junction Canal	650	5
Colonial	1	90			
Total	488	405,927	Total	655,951	14
Imports—1882	455	372,231	Imports—1882	654,825	5

By Sea.	Ships.	Tons.	By Railway and Canal.	Tons.	cwt.
Jan. 1 to Oct. 30, 1883	4103	3,239,620	Jan. 1 to Oct. 31, 1883	5,774,963	19
Jan. 1 to Oct. 30, 1882	4165	3,091,289	Jan. 1 to Oct. 31, 1882	5,333,093	16
Increase—1883	—	148,331	Increase—1883	—	441,860
Decrease—1883	62	—	Decrease—1883	—	—

EXPORTS.

Railway-borne coal passing "in transitu" through district	Tons	122,929
Sea-borne coal exported to British Possessions, or to foreign parts, or to the coast	64,320	
Ditto sent beyond limits by railway	19,562	
Ditto by canal and inland navigation	1508	85,390
Railway-borne coal exported to British Possessions, or to foreign parts, or to the coast	25,274	
Ditto by rail beyond district	58	
Ditto, by canal and inland navigation	80	25,410
Sea-borne coal brought into port, & exported in same ships	46	
Total quantity of coal conveyed beyond limits of coal duty district during Oct., 1883	233,775	
Ditto, during Oct., 1882	242,287	

Comparative Statement, 1882 and 1883.

Total distribution of coal from Jan. 1 to Oct. 31, 1883	2,328,355
Total distribution of coal from Jan. 1 to Oct. 31, 1882	2,204,532
Increase in the present year	123,823

General Statement, 1882 and 1883.

Increase in coals imported by sea during the present year	148,331
Increase in coals imported by railway and canal	441,860—590,211
Less increase in coals exported	123,823
Total increase in trade within the London district during present year	468,368

MANGANIFEROUS CHROMEISEN.

In connection with the manufacture of steel and with the production and application of certain alloys by the use of which steel is made to possess the apparently paradoxical properties of increased hardness, toughness, and ductility a process has been suggested by Mr. A. ARMITAGE, of Sheffield. He claims that this desirable end is attained by the introduction of from 0.1 to 2.0 per cent. chromium into the molten metal either in the form which he calls manganiferous chromeisen or in the form of chrome spiegel, or in both such forms, the name given being dependent upon the quantity of silicon and graphite contained in the alloy which in either case is to contain in addition to the usual proportions of the constituents of spiegel 1 to 10 per cent. of chromium. These alloys may be obtained by smelting in the blast-furnace mixtures of manganiferous iron ores and chrome iron ores together with lime and alumina compounds so as to produce a highly basic slag, and thus prevent loss of chromium. An excess of manganese being also used to prevent the chromium slagging out.

If the product be manganiferous chromeisen, that is an alloy containing a certain percentage of silicon and graphite the said alloy is mixed with the requisite proportions of pig-iron, and subsequently melted therewith and the molten mixture converted into steel in the ordinary manner. The manganese present in the metal it is anticipated will prevent partially or totally the oxidation of the chromium during the conversion of the metal into steel. If the alloy obtained is chrome spiegel, that is should it contain such small proportions of silicon and graphite as will render it uninjured if added directly to the metal when in its molten state in the converter furnace or ladle then the alloy may be used alone or mixed with ferro-manganese or spiegel either in the solid state or run into the converter furnace or ladle after melting and whether or not chromium has already been introduced into the metal by the use of manganiferous chromeisen or otherwise; by this process oxidation will be avoided, and the whole or greater portion of the total chromium contained in the chrome spiegel will be found in the steel.

IMPROVED STEEL-MAKING FURNACE.

The improved furnaces invented by Messrs. DICK and RILEY, of the Steel Company of Scotland, are of the kind in which gaseous fuel is used, and in connection with which heat regenerators are employed. The regenerative chambers are buildings detached from the main furnace building, and where four are used as will generally be the case, are arranged in two pairs at the ends of the space with the furnace between them. Each chamber may be wholly detached, or each pair may be formed in one building side by side, or one above the other. The chambers are built, according to one modification, so as at their upper parts to communicate as directly as possible with the furnace, being close to the furnace, or connected to it by very short flues. Each regenerative chamber is by preference of a cylindrical form, and consists of an iron or steel shell lined with fire-brick. The communications between the chimney and the chambers used respectively for heating the gas and the air are controlled by separate valves; and sight holes are provided to allow of the internal condition being ascertained at any time. The tops of the chambers are by preference made removable, in the modification now being described, and each entire chamber may be made portable so that it can be raised for the purpose of emptying out the brick checkerwork with which the chamber is filled as usual. Any one of the regenerative chambers or the furnace may be cooled down and repaired by itself without its being necessary to disturb or cool the other parts.

The main furnace is constructed, according to one modification, within a cylindrical shell of iron or steel lined with fire-brick and silica bricks. The roof or dome consists of fire-brick bound by an iron or steel ring, and is by preference made removable for the purpose of charging the furnace, an arrangement effecting a considerable saving of time, and allowing of "skulls" being charged without previous breaking; whilst the side thrust on the walls, which is caused by the ordinary construction of roof is avoided. Diametrically opposite ports are formed for the ingress and egress of the gases into and from the furnace. The parts in which these ports are formed are much less costly and troublesome, and much more easily renewed than the "blocks" of existing furnaces worked with gaseous fuel. The improved construction also allows of what are known as basic bricks being used more economically and advantageously than in existing furnaces. The furnace may be made of an oval or rectangular form in plan, but the inventor believes the circular form to be the best. The regenerative chambers may also be made of various

forms, preference being given to the circular or cylindrical form. The regenerative chambers may be built on pillars or otherwise in a relatively elevated position, so that the communications between them and the furnace may be at their bottom parts instead of at their upper parts, which improved arrangement will completely prevent their being obstructed or injured by the running in of fused fire-brick or slag.

UTILISATION OF POOR COPPER ORES.

The wet process for the reduction of certain poor cupreous ores formerly in use at the Maidanpek Mines, in Serbia, formed the subject of an interesting paper by Mr. Brenton Symons, Assoc. M.I.C.E., read before the Mining Institute of Cornwall, on Tuesday evening. The process was perfected by Mr. Symons whilst at the mines. The author stated that when some recognised chemical reactions are combined in some sequence of operations to establish a process for the elimination of a metal from its matrix, it was often patented and published to the mining community as a comprehensive method to be used for the reduction of all ores enclosing such metal, and much disappointment had occasionally befallen companies which had been induced to work processes that in practice had failed to satisfy the requirements demanded. The species of cupreous minerals found in large deposits were so rarely of homogenous structure that the details of any particular process could not be indiscriminately applied to their reduction because, although the general principles of most hydro-metallurgical methods for the extraction of copper from ores of low grade possessed a generic similitude, difference in cohesion, composition, structure, and other qualities might determine the failure of a process if insufficiently appreciated.

In all ores of meagre percentage the greatest importance must be attached to thoroughness of extraction, and no treatment should be considered satisfactory, either chemically or commercially, which permitted an undue portion of the metallic tenure to remain in the residues. In the East of Europe there were not a few mineral properties which contained large reserves so dissimilar that the ores from each mine treated separately would require a process essentially modified. Such was the case with the diverse ores proceeding from the Maidanpek deposits, and it was this disparity that had led to so many disheartening and expensive experiments before a method which would include the various oxides and sulphides was arrived at. Mr. Symons noticed briefly the geological structure of the rocks which enclosed these enormous deposits, and made some observations on the minerals therein segregated, and then spoke of the advantages of the Maidanpek process (which he observed was the final outcome of numerous attempts which were made to develop an economic system of reduction), the advantages being principally cheapness, and the obtaining of more copper out of the material.

The machinery which was requisite to carry out the system did not demand an outlay of very considerable amount. As to the cost of treatment, taking the small quantity of 10,000 tons, the cost per ton of ore would be nearly—mine cost per ton, 2s. 10d.; transport, 1s. 10d.; reduction charges, 1s. 11d.; administration, including officers and mechanics, 2s.; total, 8s. 7d.; but the completion of tramways from the Maidanpek Mines to the works would reduce the cost per ton to 7s. 6d. The galleries driven to extract smelting ores had left stopes which contained more than 100,000 tons of ore in sight, the cupreous value of which had been shown by numerous assays to average very nearly 1½ per cent. Admitting that the process was equal to the separation of 1½ per cent. of the tenor, each ton of copper placed in the market would cost 35s. After paying 1-20th mine dues, a profit of about 7s. on each ton of ore treated would be left, reckoning Chili bars at 65s. The writer, who directed the Maidanpek Copper and Iron Works for 10 years, claimed the invention of no new reaction, and any advantages the method might possess was due simply to the admixture of the ores and to the liberation of the ferric excess, which in many processes clogged the bath, and produced a muddy precipitate of copper.

In the course of the discussion which followed Mr. K. Symons stated, in reply to Mr. K. J. Frecheville, Her Majesty's Inspector of Mines, that his son (Mr. Brenton Symons is absent from England) informed him that wages in Serbia were lower than in Cornwall. The owners of the Maidanpek Mines had stated that since his son had left that mine, and the process in question had been abandoned there, they had lost some 200l. or 300l. a month in the mine. Mr. Symons also thought that there was a quantity of material on Cornish mines which was not utilised, and submitted the following result of assays which Capt. Richard Pryor had made of the attle at Clifford Amalgamated Mine, Gwennap, the samples being fairly taken—Copper, 2 to 2½ per cent.; silver, 2½ to 3½ ozs. per ton; arsenic, 12 to 13 per cent.; tin residue, 14 or 15 lbs. per ton of attle.

Mr. Frecheville remarked that he thought the paper most valuable. A process had been elaborated in it which, while it contained no new principle in metallurgy, was yet very ingenious, though it was applicable to a kind of ore which did not obtain in this country. From the samples before the meeting Mr. Frecheville saw no reason why the process, if continued, should not give good results. It was very clear that Mr. Symons had carefully considered the whole question; and, although we had no mines in this county where ores similar to those found at Maidanpek existed, yet as Cornishmen went all over the world it was very likely that the paper might be of use to some member of the Institute. Mr. Brenton Symons promises a paper "On the Utilisation of Low-price Ores," such as are thrown over the wastes of Cornish mines, and no doubt is entertained that it will attract considerable attention.

CALCINING AND ROASTING SULPHUR ORES.

The apparatus invented by Mr. I. S. McDUGALL, of Chadderton, consists of a series of superposed chambers or floors furnished with rakes or agitators and feeders by means of which the materials under treatment are fed continuously through the series of chambers whilst being submitted to the burning, calcining, or roasting process. The said rakes or agitators and feeders are fixed to a main shaft passing through the chambers which are provided with openings or passages from chamber to chamber alternately at the centre and at the side so that the materials are passed by the said rakes across each floor and from chamber to chamber throughout the series of chambers constituting the furnace until the said materials are finally delivered out of the said furnace. The said shaft and the said rakes when made of cast-iron and exposed to great heat are liable to warp and break when strained. To obviate this he makes the said shaft and rakes hollow, and provides them with wrought metal pipes fixed in their interiors and forming an inner wrought metal lining to the cast metal. In order to render it possible to replace the shaft without removing the floors of the chambers he provides the shaft at each place where the rakes are to be fixed thereto with shoulders, and the rakes with a forked inner end which embraces the shaft. A pin or cotter is passed through the forked ends of the rake to secure it to the shaft, and by withdrawing this cotter the rakes may be readily removed from the shaft, which can then be withdrawn from the furnace for renewal or repair.

In order that the shaft may be readily removed for repairs or other purpose after the rakes are removed as hereinbefore described (without the necessity for breaking the floors) on each alternate floor where the material passes through a passage at the side he furnishes the centre floor box through which the shaft passes with a flanged moveable cover resting on a flange on the floor box and fitting round the shaft by which arrangement the shaft can readily be removed through the floors and out at the top of the furnace. A loose piece of hard steel may be fixed to the bottom of the shaft working on a loose steel disc, so that the said loose pieces take the wear and when worn can be readily replaced without necessitating the renewal of the shaft.

In order to adapt the furnace for use for treating various kinds of materials requiring submission to the heat of the furnace for a longer or shorter period he provides in addition to the feeding hopper at the top other hoppers communicating with floors at different levels through which the different materials may be fed at the same time according to the number of the chambers through which they are required to pass. In order to dry the materials (where desirable) before they are fed into the chamber he provides a floor outside the

roof of the top chamber and furnishes this floor with a rake so that the material being fed on to the said floor is dried thereon, and then by the operation of the said rake is fed therefrom into the top chamber.

The invention relates further to the provision of means for freeing the gases from dust and solid impurities immediately after leaving the furnace and before they pass to the chamber or vessels in which their utilisation or chemical combination or treatment takes place. These means consist of a chamber divided by a series of plates or baffles having holes or perforations therein. The holes in the one plate or baffle are not opposite those in the adjacent plates or baffles, so that the dust and solid impurities are impeded by the said plates as the gases pass through the holes and the said dust and solid impurities fall to the lower part of the chamber. The bottom parts of the said plates or baffles are without holes and a damper is provided between each plate or baffle which on being moved into position closes in the space between the lower unperforated parts of the said plates or baffles and cuts off the enclosed space so that the gas has not access thereto. These dampers are for the purpose of thus being placed in position to allow of the dust and solid impurities being removed from between the plates without permitting access of air to the gas. The said chamber can be made to answer the purpose of a nitre oven by providing bearing bars and other parts within the said chamber for supporting the nitre pots and suitable doors for the charging and removal of the nitre pots. The vertical shaft may be rotated by any convenient gearing from the source of motive-power and connections may be made from the said gearing for operating charging pistons for pushing the material from the hopper or hoppers on to the drying-floor or into the chambers of the furnace. Each chamber may be provided with a manhole or manholes for gaining access thereto when required.

LOCAL TAXATION, AND THE RATING OF MACHINERY.—The second edition of Mr. T. F. Hedley's report on the rating of machinery, with notes of the special cases, &c., in Laing v. the Overseers of Bishopwearmouth, with an appendix containing a description of the machinery included in the special case, and so on, has just been issued in a handsome volume by Messrs. Knight and Co., of Fleet-street. Mr. Hedley's views upon this question are already well known, so that it will suffice to say that he puts forward the same arguments as before. He complains that the "instructional letter to the overseers of the Poor and Union Assessment Committees" embodying his views has not been issued by the Local Government Board, although he suggested such issue in 1878. He understands that the reason for not issuing such an instructional letter on the subject is that "the board never interferes with Local Assessments," and it is to be hoped that that principle will long be adhered to. As a work of reference Mr. Hedley's book will prove of considerable value to a very large class of readers.

HOLLOWAY'S OINTMENT AND PILLS—FEMALE COMPLAINTS.—On the mothers of England devolves much and serious responsibility in securing for their daughters robust health; frequently, alas! thoughtlessly sacrificed by culpable bashfulness at a particular period of life, when all important changes take place in the female constitution, upon the management of which depend future happiness or misery. Holloway's pills, especially if aided with the ointment, have the happiest effect in establishing those functions, upon the due performance of which health and even life itself depend. Mother and daughter may safely use these powerful deobstruent remedies without consulting anyone. Universally adopted as the one grand remedy for female complaints these pills never fail, never weaken the system, and always bring about the desired result.

LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 6	Isle of Man	110	£ 9 16 0	Weston, Son, and Co.
8	Talargoch	15	7 2 6	Quirk, Barton, and Co.
	North Hendre	30	7 8 0	ditto
	Rhosmor	60	7 10 6	ditto
	Tank, Great Consols	120	6 14 0	Nevill, Bruce, and Co.
	ditto	30	6 17 6	Walker, Parker, & Co.
	Roman Graves	50	7 2 0	Adam Eytton
	ditto	50	7 1 6	Runcorn Company
	ditto	100	6 18 0	Sheldon, Bush, & Co.
	ditto	50	6 18 6	J. H. Moore
9	South Darren	50	12 0 6	Walker, Parker, & Co.

SILVER-LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 2	Rara Fortuna	10½	£51 12 0	—
	ditto	3½	40 9 9	—
	ditto	¾	38 3 0	—
	ditto	16½	35 15 0	—
	ditto	8½	28 12 0	—

BLENDE.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 7	Talargoch	100	£ 4 13 6	Vivian and Son.
8	Tank, Great Consols	100	4 14 0	ditto

BLACK TIN.

Date.	Mine.	Tons	c q. lb.	Price p. ton.	Amount.	Purchasers.
Oct. 23	Agar	32	13 2 10	£52 15 0	£1723 17 0	O-Boltho.
Nov. 7	ditto	21	13 3 2	52 15 0	1144 1 2	Williams.

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WILLIAM J. VIAN, Secretary

TO SPECULATORS.

As the attention which American mining investments has recently received from English noblemen and capitalists suggests the advent of extensive operations, Messrs. ARCHER and SON deem it opportune to address a few words of enlightenment to those readers of the *Mining Journal* who may feel favourably inclined to participate in the movement. Although mining in Britain has given some marvellous results they are lilliputian as compared with the results of American mining, which on the most trifling outlays—sometimes only a few dollars—has in almost innumerable instances given colossal fortunes, but as the mineral resources of the Great West are so boundless it necessarily follows foreign capital is necessary to its development, and some idea may be formed of the prospects of unusual returns to those who may have the temerity to make a tentative venture to refer to the fact that the total dividends paid by 28 mining companies during the present year to end of September last aggregated the enormous sum of nearly \$3,000,000 or £1,600,000 sterling. More by a vast extent than the profits during the same period of all the mines in the world. As agents for a company which has a brilliant future Messrs. ARCHER and SON invite attention to its prospects, and therefore beg to introduce

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This company, which was duly incorporated under the State laws of Colorado on July 5, 1881, was inaugurated with more extensive objects than those of an ordinary mining enterprise, inasmuch as they include smelting, and consequently more of a commercial than speculative undertaking. Moreover, instead of confining its prospects to the result of opening up one mine, as is usually the case, its capital is devoted to the development of several properties, thus distributing the risk and minimising the possibility of an unprofitable result; the plan being to select from amongst a number of young speculations those languishing from want of funds capable of being leased or purchased at a nominal cost, and which give prospects that a vigorous development would render profitable results.

The properties thus selected so far and acquired by the company are as follows:—

First—An interest in the Lone Star Consolidated Mining Company, amounting to one-half of its capital stock, the mines of which are contiguous to the "London Mine" branch of the Denver, South Park, and Pacific Railway, near Olma Park County, consisting of two claims on a vein opened by a shaft 200 feet deep, yielding ores containing from 30 to 2000 ozs. of silver to the ton, and which are rapidly merging into a dividend-paying state.

Second—One-half of the Lake Side vein, situated eight miles above "Crested Butte," Gunnison County, near the end of the "Crested Butte" branch of the Denver and Rio Grande Railway. This property possesses a magnificent vein of lead, giving an average of 170 ozs. of silver to a ton of ore, and 40 per cent. of lead, and is opened by a tunnel 600 feet below the surface. The profits from the development of this property alone will, it is generally understood, permit of large dividends on the capital stock of the company.

Third—One-half of the "Wide West" and "New Era" veins, situated eight miles from Copiact station on the same railway in Fremont County. Its production is copper ore, yielding 25 per cent. of metallic copper at the very shallow depth of 40 feet. When further depth is gained and the vein thoroughly opened out and operated on at various points, great and profitable returns will be a natural result. It may be instructive as showing the richness of these ores—25 per cent. of metal—to compare this high rate with the yield of English copper ores, the average of which is only 7 per cent.

Fourth—All of the Green Mountain group, consisting of three full claims of 4500 feet in length by 300 feet in width, situated 12 miles from Canyon City, near the Silver Cliff branch of the Denver and Rio Grande Railway on a vein of quartz of the extraordinary width of 100 feet, which is in reality one immense mass of oxide and sulphate copper ores, and which has been explored by shafts and drifts 1000 feet in length and 160 feet in depth, and increasing at the rate of 3 feet per day. It is generally conceded by mining authorities that the development of this enormous vein may be expected to give such a yield as will place this property amongst the most celebrated copper-producing mines in the world. The present yield is about 900 tons of ore per month (containing 17 per cent. of metallic copper), equal to the returns of the most profitable copper mine in England; but this yield is regarded only as an indication of what the output will be when the vein is thoroughly opened out by extensive operations.

The development of these properties will cause the Rocky Mountain Company to become a gigantic enterprise, and there can be no question the profits therefrom will give enormous—probably unprecedented—dividends to the shareholders.

It should be added that, with a view to render the vast resources of the company available to the utmost extent, the company are their own smelters, and for the reduction of their ores are erecting extensive smelting and reduction works in Canyon City. This is a feature of great economic value, and is considered to be of such importance to the interests of Canyon City that the business men of that city gave the ground for the site, consisting of 10 acres of land (valued at \$10,000), as a present to the company.

Pending the erection of the smelting-works the produce of the mines has been allowed to accumulate. The works, however, will be sufficiently advanced to make a commencement of smelting on Dec. 1 next, and it is quite understood the result of that month's operation will enable the company to pay its first dividend at the annual meeting of the company, to be held on Jan. 22, 1884, a circumstance probably unparalleled in the history of mining. Thenceforth dividends will be regular and continuous, in proportion to the rate of development, and may be safely anticipated to be solid and unquestionable. The nominal capital of the company is \$3,000,000 (600,000 £), divided into 300,000 shares of \$10 (2 £) each, fully paid, and non-assessable. The directors are—WILBUR R. JOHNSON, Canyon City (President); J. A. GRIER, Chicago (general freight agent, Michigan Central Railroad); Vice-president; DAVID W. PAGE (of Culver Page, Hoyne, and Co., Chicago); J. W. HARRISON (of Shickle, Harrison, and Howard, St. Louis); Treasurer; W. E. JOHNSON, General Manager, Canyon City; and ORSEN G. STANLEY, Counsellor-at-Law, Secretary. Offices—Canyon City.

The above details give, we believe, all the information of the company referred to, and will convince speculators that the shares represent an exceptionally sound opening to invest in, with a reliable prospect of not only an early advance in price, but a regular and continuous dividend, and a consequent gradual fructification of the amount invested to an extent which, to express an opinion of, might be deemed enthusiastic exaggeration. We, therefore, content ourselves by recommending the company's stocks as an investment, in perfect confidence that an unusually profitable result would be realised.

Persons desirous of securing shares are invited to send their applications to us, accompanied with the amount of £2 per share by draft on London Bankers, or BROWN BROTHERS and Co., New York.

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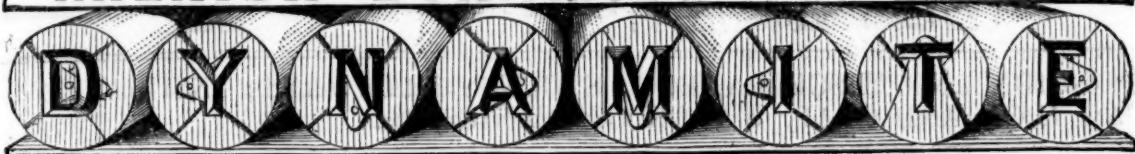
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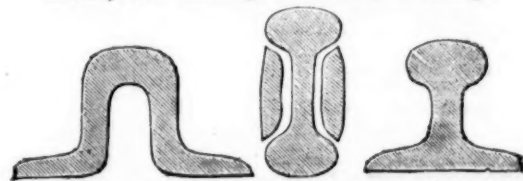
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Don Pedro North del Rey*	1	0	0	½ ½ ½
Eberhardt, * s, Nevada?	1	0	0	¾ ¾
Eureka, * s, Nevada	1	0	0	0
Eschequer, * g, California?	1	0	0	¾ ¾ ¾
Flagstaff District, * g, Utah	1	0	0	¾ ¾
Gold Coast, * g, Waseau	1	0	0	0
Gold Hill, * g, North Carolina	1	0	0	¾ ¾
Gold Mining Assn. of Canada*	1	0	0	0
Great Southern Mysore, * g	1	0	0	..
Hoover Hill, * s, North Carolina ..	1	0	0	¾ ¾
Hultafall, * i, öf, Örebro, Sweden .	1	0	0	..
Indian Consolidated, * g	1	0	0	0
Ind. Glenrock, * g, Wynaad?	1	0	0	¾ ¾
Isabelle, * g, s, California	1	0	0	½ ½ ½
I.X.L., * s, s, California*	1	0	0	½ ½ ½
Javali, * g, Nicaragua*	2	0	0	..
Kapanga, * g, New Zealand	1	0	0	¾ ¾ ¾
Kinooloro, * s, Colorado	1	0	0	¾ ¾
London and California, s? i?	2	0	0	..
Madras, * g, Mysore	1	0	0	..
Mitchipoten, * set, e, Quebec	1	0	0	¾ ¾
Mishouri, * fad, (fully paid)	10	0	0	0
Moselle, * i, c-i, Germany*	1	0	0	..
Mysore, * g, India?	1	0	0	¾ ¾ ¾
New Caliao, * g, Venezuela	1	0	0	..
New Emma, * g, Utah	10	0	0	½ ½
Nord Run, * Syd, Cad. (A 2960 pref	1	0	0	..
Norway, * Halsdon and Sæden	1	0	0	..
Nouv. Monde, * V, (en com.)	1	0	0	¾ ¾ ¾
Sundvödroc, * Mexico	1	0	0	..

NON-DIVIDEND FOREIGN MINES—continued

Shares.		Paid.	Clos. pr.
34022	San Pedro,* c, Chili	2 0	0...
120000	Santa Cruz,* (ex. 10s. red. cap.)...	1 0	0...
50000	Sainte,* s-l, bl, Arizge, France...	1 0	0...
100000	Silver Chard,* s, Colorado	1 0	0...
50000	Silver Peak,* s, Colorado	1 0	0...
200000	Souback & Oatir Alan,* s-l, Turkey	1 0	0...
107363	So. Austral. Cop. Mines (Corp.)	1 0	0...
50000	South-East Wynaad,* g, India	1 0	0...
50000	Sunus,* s-l, c, Germ. (100,000pf.)	1 0	0...
100000	Tucuman,* c, Bolivia	0 15	0...
43174	United Mexican,* l's, Mexico	29 10	3...
50000	Virneberg,* c, Rheinbreith, Ger.*.	2 0	0...
200000	Victoria,* g, Venezuela	1 0	0...
120000	Westworth,* g, Wynaad	1 0	0...
100000	West Frntino & Boliv,* g, Colombia	1 0	0...
100000	Wynaad District,* g, India	1 0	0...
80000	Wynaad Perseverance,* g	1 0	0...
75000	Yorke Peninsula, c, So. Australia	1 0	0...
140000	Yuba River,* g, hyd California	1 0	0...

INSURANCE COMPANIES.

Issue, Shares,		Fv.	Close, pr.
50000	Alliance British and Foreign ..	11	36½ 37½
10000	Ditto, Marine ..	20	22 24
50000	British and Foreign Marine [L.] ..	10	20½ 21½
50000	Commercial Union ..	5	18 19
50000	53 ..	5	5½ 6¼
27500	Globe Marine ..	10	11 12
13453	Imperial Life ..	10	21 23
100000	Indemnity Marine ..	50	14½ 15½
49626	Lion Fire [L.] ..	2	5 5½
49626	Lpool & Lond. Globe (S1 annuity) ..	2	23½ 24½
49000	London ..	12½	54 56
49000	London & Lancashire Fire ..	2½	4 4½
100000	London & Lancashire Marine [L.] ..	4	4½ 4¾
10000	Marine ..	15	26 28
50000	Merchants' Marine [L.] ..	2	3½ 3¾
50000	Maritime [L.] ..	2	4½ 4¾
40070	North British and Mercantile ..	9½	23 25
30000	Northern ..	10	49 46
40000	Oceanic Marine ..	5	5 5½
200000	Phoenix ..	—	220 220
100000	Queen ..	—	1½ 2½
100000	Railway Passengers ..	25	8 8½
200000	Rock Life ..	5	8 8½
50000	Sea .. (ex div.) ..	2	—
135000	Lancashire ..	2	4½ 4¾
4000	Standard Marine ..	4	—
4000	Thames and Mersey Marine [L.] ..	3	9½ 10¼
49840	Union Marine ..	3	4½ 4¾
50000	Universal Marine [L.] ..	3½	4½ 4¾

MISCELLANEOUS.

Shares.	Company.	Par.	Price.
10	Anglo-American Brush	3 0	2½ 3
10	Ditto do.	10 0	4½ 5½
5	Australasian Electric	3 0	2½ 3
2½	Australian Agricultural	21 10	82 85 ½
5	Hammond Elect. L. & P. Sup.	3 15	2½ 3
5	Indian and Oriental Electric	2 0	1 1
10	John Verron Hope & Co.	5 0	8½ 5½
10	Ditto, preference	10 0	10½ 11
1	Maxim-Weston Electric	1 0	½ ¾
Stk.	Scottish Australian Invst. Co. 100	220 00	230 230
Stk.	Ditto New Ordinary	100 00	123 130
Stk.	Ditto 5 per cent. guar. pref.	100 00	130 135
Stk.	Ditto 5 per cent. pref.	100 00	119 114
5	Swan United Electric	136 00	136 136
10	United Asbestos	10 0	1½ 2½
1	Zoedemo (L)	3 0	1 1

NON-DIVIDEND BRITISH MINES

Share.		Paid.	Lat.	Cl.	pr.
25000	Aberdun, * <i>t</i> , Denbigh	1 10 0	13	1	13
12000	Andertons, <i>t</i> , <i>c</i> , Devonshire	1 0 0	13	1	13
12000	Ashstone, <i>t</i> , Carnarvonshire	5 0 0	—	—	—
12000	Bedford Unit., * <i>c</i> , Tavist. (21 lib.)	0 14 0	13	1	13
30000	Bodirid, <i>t</i> , <i>bl</i> , Denbighshire	1 0 0	—	—	—
30000	Brada, <i>t</i> , <i>bl</i> , Isle of Man	1 0 0	—	—	—
20000	British Mariner, * <i>t</i> , Denbighshire	1 0 0	3	3	3
30000	Beuno Consols., * <i>s</i> , <i>t</i> , Flintshire	1 0 0	13	—	—
30000	Bwch United., * <i>t</i> , Cardigan	1 0 0	13	1	2
12000	Coliaceum Consols., <i>c</i> , <i>bl</i> , Llanerion	0 2 6	—	—	—
50000	Carn Camborne, * <i>t</i> , <i>c</i> , Camborne	1 0 0	13	1	13
2000	Carnarvon, * <i>c</i>	1 0 0	3	3	3
37500	Carnarvonshire Cons., * <i>t</i> , Llanrwst	2 0 0	13	3	13
6000	Cathwal, <i>t</i> , <i>c</i> , Cumberlan	2 19 0	13	1	13
2000	Central, <i>c</i> , <i>t</i> , Gwynedd	1 3 6	—	—	—
50000	Cood-y-Feddy-Pant-y-Buarth, * <i>t</i>	1 17 6	13	—	—
2450	Cook's Kitchen, * <i>t</i> , Illogan	30 14 3	14	3	14
10000	Cornwall Great Cons., * (4500 issued)	1 0 0	—	—	—
8000	Craiglog, * <i>t</i> , <i>bl</i> , Denbighshire	0 17 0	3	3	3
4000	Crook Burn, * <i>c</i> , Cumberlan	0 17 0	—	—	—
4872	D'resby Mountain, <i>t</i> , <i>bl</i> , Llanrwst	0 10 0	3	3	3
2000	Derwent, * <i>t</i> , Durham	4 0 0	—	—	—
12000	Devon Friendship, * <i>c</i> , <i>ars</i> , Tavistock	1 0 0	3	3	3
12000	Devon United. (21 shares)	1 5 0	3	3	3
50000	Drakewells, * <i>c</i> , Calstock	1 15 0	6	4	6
12000	East Blue Hills, <i>t</i> , St. Agnes	0 0 0	6	4	6
6000	East Bodarod, <i>c</i> , St. Just	1 0 0	6	4	6
6114	East Callanach, <i>t</i> , St. Cleer	4 19 0	—	—	—
4000	East Chiverton, * <i>c</i> , Perranzabuloe	10 17 3	3	3	3
1000	E. Craven Moor, * <i>t</i> , Pateley Bridge	1 0 0	3	3	3
4000	East Devon Cons., * <i>c</i> , Buckfastleigh	2 0 0	13	1	13
4000	East Long Rake, * <i>t</i> , Wales	1 0 0	—	—	—
155000	East Roman Graves, * <i>t</i> , Salop	1 0 3	3	3	3
10000	East Van, Llandudno	5 0 0	—	—	—
2048	East Wheal Lovell, <i>t</i> , Helston	1 3 6	1	3	1
4000	East Wheal Rose, * <i>s</i> , <i>t</i> , Newlyn East	1 0 0	3	3	3
12000	Frongoch, * <i>t</i> , Cardign (11000 sh.iss.)	2 0 0	—	—	—
12000	Glawst, * <i>c</i> , Taveock	0 0 0	3	2	3
40000	Glasg. Car., * (30000 sh. 41 pd., 10000	15s. pd.)	3	3	3
10000	Gobbett, * <i>t</i> , Devon	1 0 0	13	1	13
10000	Goddards, * <i>t</i> , <i>c</i> , Carnarvon	1 0 0	—	—	—
2000	Godfrigan, * <i>t</i> , Cardiganshire	1 0 0	3	3	3
850	Goderidge, * <i>t</i> , Cardiganshire	1 0 0	3	3	3
500	Gorseid and Merilyn Cons., * <i>t</i> , Pent.	2 10 0	3	2	3
20000	Great Dyflid (10000 sh. issued)	0 6 6	3	3	3
6000	Great West Chiverton, <i>t</i> , St. Agnes	1 0 0	3	3	3
6000	Great Wheal Worthy, * <i>t</i> , Cornwall	1 0 0	—	—	—
6000	Grogwinion, <i>t</i> , Cardigan	2 0 0	3	3	3
10000	Gwyn-y-Mynydd, * <i>s</i> , <i>t</i> , Flint (pref.)	4 0 0	13	3	13
7000	Gwydr-y-Aml, * <i>t</i> , <i>bl</i> , Carnarvon	1 0 0	—	—	—
10000	Healdish, * <i>t</i> , Westmore. (10s. sh.)	2 6 0	3	3	3
2000	Herodons, * <i>t</i> , near Liskeard	1 0 0	3	3	3
2000	Hingston Down Cons., * <i>c</i> , Calstock	0 13 0	3	3	3
5000	Holway Consols., * <i>t</i> , Flintshire	1 0 0	13	3	13
8000	Kirckmichael, * <i>t</i> (2000 unissued)	1 0 0	—	—	—
25000	Kill Hill Gt. Cons., * <i>c</i> , <i>ars</i> , <i>m</i> , (21 sh.)	1 2 6	3	3	3
5000	Lady Ann, * <i>s</i> , Llanarnon	1 0 0	—	—	—
5000	Langford, * <i>s</i> , <i>c</i> , Caillington	0 10 0	3	3	3
5000	Llandegla, * <i>t</i> , Wales	1 0 0	—	—	—
5120	Lovell, <i>t</i> , Wendron	0 18 0	3	3	3
6000	Medlyn Moor, * <i>c</i> , Llinkinhorne	7 9 6	3	3	3
8000	Mona, * <i>c</i> , Anglesea	3 15 0	—	—	—
2000	Mona Consols., * <i>c</i> , Anglesea	5 0 0	2	2	2
5000	Monkstown, * <i>m</i> , <i>m</i> , <i>dev</i> , Devon	2 0 0	13	1	13
5000	Motyn Consols., <i>s</i> , <i>t</i> , Flint	1 0 0	3	3	3
2000	Morfa Du, <i>t</i> , <i>g</i> , <i>s</i> , Anglesea	1 0 0	3	3	3
2000	Mounts Bay, * <i>c</i> , <i>t</i> , Breage	1 0 0	3	3	3
6114	Mount Carbis, * <i>c</i> , <i>t</i> , Redruth	1 15 0	3	2	3
5000	New Camoan Cons., <i>c</i> , St. Cleer	0 5 0	6	4	6
5000	New Coneyth Cons., <i>t</i> , Illogan	9 13 6	2	2	2
8000	New Doleath, <i>s</i> , <i>t</i> , <i>g</i> , <i>h</i> , <i>h</i>	3 10 0	—	—	—
8000	New Great Wheal Vor, <i>t</i> , Breage	3 10 0	—	—	—
6000	New Holmbush, * <i>t</i> , <i>c</i> , Caillington	3 0 0	—	—	—
6000	New Kitty, <i>t</i> , St. Agnes	1 0 0	2	—	1
5000	New Redmoor, <i>var</i> , Caillington	1 5 0	—	—	—
7500	New Terras, * <i>t</i> , St. Austell	2 0 0	3	3	3
3500	New Trefroth, * <i>t</i> , Lelant	6 0 0	—	—	—
5000	New Trumpet, * <i>t</i> , Wendron	1 0 0	13	1	13
5000	New Tyn-y-Glyn, * <i>t</i> , <i>h</i>	7 0 0	3	3	3
3000	New West Caradon, * <i>t</i> , <i>h</i>	0 5 6	6	4	6
2000	New Wheal Pevor, <i>t</i> , Redruth	1 0 0	—	—	—
5000	New Wye Valley, <i>t</i> , Montgomery	1 0 0	1	1	1
2000	North Blue Hills, <i>t</i> , St. Agnes	0 2 6	2	2	2
5328	North Busy, <i>t</i> , <i>c</i> , Boorliff	1 16 8	3	3	3
5000	N. D'resby Mount, * <i>t</i> , <i>bl</i> , Carnarv.	1 0 0	—	—	—
5000	North Goginan, * <i>t</i> , Cardiganshire	1 0 0	1	1	1
4600	North Green Hurth, * (3400 l. pd.)	0 2 6	1	1	1

NON-DIVIDEND MINES—continued

Altars.	Prind.	Last wk.	Class pr.
25000 North Grosvenor, * s, i, Cardighr..	1	0	0
12000 North Herodsfoot, i, Liskeard ..	0	13	0
60000 North Molton, * c, m, i, Devon ..	1	0	0
6000 North Penstruthal, t, c, Gwennap ..	2	10	0
2926 North Treskerby, c, St. Agnes ..	1	0	0
8000 Northern, * i, Durham ..	8	17	10
40000 Okel Tor, * t, c, c, Calstock ..	1	0	0
80000 Old Shepherds s-i, Cornwall ..	1	0	0
60000 Owen Ven and Tregur, * t, c, Marazion ..	1	0	0
12000 Pandora, * i, Carnarvon ..	2	0	0
45000 Parys Corporation, * c, Anglessea ..	1	0	0
7500 Pateley Bridge, t, Yorkshire ..	1	0	0
6000 Pennant, i, West North Wales* ..	4	3	0
20000 Penegarby, t, Gwent, W. Shire ..	5	0	0
15000 Perran Orsedd, * i, Flintshire ..	1	0	0
15000 Perran Consols, * i, ..	1	0	0
12000 Perran Wheal Alfred, c, ..	0	2	6
6000 Polcebo, t, Crownan ..	0	14	6
10000 Polrose, t, Cornwall ..	1	12	0
10000 Port Nigel Syn, * i, Carnar. (4000 i.) ..	0	15	0
12000 Princes, * s-i, (als. 12000 pf. 10 p.c.) ..	1	0	0
12000 Rackett Wales, c, c, Calstock ..	1	4	8
26000 Russell United, c, Tavistock ..	0	15	8
30000 Silver Hill, i, Callington ..	1	0	0
50000 Sinclair, * i, W. Wilford ..	1	0	0
40000 Bortridge, * c, Hornsea ..	1	0	0
20000 South Carbis, t, c, Redruth ..	1	0	0
42000 So. Devon Unit, * c, Buckleigh ..	0	10	0
5000 South Dolcoath, c, t, Illogan ..	0	19	0
8000 South Penstruthal, t, c, Gwennap ..	3	4	6
30000 So. Phoenix & Oradon, * c, L. L. L. ..	1	0	0
8000 South Polcarne, t, c, Camborne ..	5	11	8
8043 South Wheal Crofty, c, Illogan ..	5	4	6
40000 Tamar, * t, Bearstall, c, Illogan ..	9	14	4
11000 Tankerville Gt. Consol. ..	1	0	0
12000 Trebartha Lemanne, t, Northill ..	1	0	0
6000 Tregembo, t, c, Cornwall ..	4	0	0
50000 Tregontrees and Old Polgooth Con. ..	1	0	0
100000 Trosavean, * t, c, Gwennap ..	1	0	0
60000 Trevarren United, t, Cornwall ..	1	0	0
8000 Trevaunance, t, St. Agnes ..	0	4	0
12000 Violet Seton, c, Camborne ..	10	0	0
50000 Wardale, * i, Northumb. (40 sh.) ..	12	0	0
12000 West Assheton, t, Carnarvon ..	1	0	0
12000 West Cardon, c, St. Cleer ..	0	8	0
3000 W. Craven Moor, t, Pateley Bridge ..	10	0	0
12000 West Crebor, c, Tavistock ..	0	11	8
10240 West Devon Consols, c, Calstock ..	1	2	0
10000 West Godolphin, t, c, Breage ..	1	2	6
12000 West Hill, c, St. Cleer ..	0	1	0
2000 West Lisburne, * i, Cardigan ..	1	0	0
3000 West Mary Ann, i, Menheniot ..	1	13	0
20000 W. Pateley Bridge, i, Yorkshire ..	1	0	0
12000 West Phoenix, t, L. L. L. ..	1	0	0
6000 West Polbrean, t, c, St. Agnes ..	0	9	6
6190 West Polidice, St. Day ..	6	18	0
512 West Tolgus, c, Redruth ..	102	0	0
2048 West Wheel Frances, t, Illogan ..	38	13	0
3000 West Wheel Pever, t, Redruth ..	3	10	6
6000 West Wheel Seton, c, Camborne ..	17	0	0
6000 Wheel Agar, c, Illogan ..	18	0	0
6144 Wheel Bassett, c, Illogan ..	8	19	0
4000 Wheel Benny, * c, t, Latchley ..	1	0	0
3000 Wheel Boys, t, Redruth ..	1	3	6
50000 Wheel Castle, * c, t, St. Just ..	1	0	0
12000 Wheel Coates, t, St. Agnes ..	0	10	6
2585 W. Comt., & No. Tres., t, c, Gwennap ..	2	2	0
30300 Wheel Elizabeth, t, c, Gwennap ..	1	0	0
12288 Wheel Jane, t, Kea ..	1	0	0
12000 Wheel Jewell, c, St. Hilary ..	3	1	8
50000 Wh. Honey and Trelawny, * s-i, Lisk ..	2	0	0
12000 Wheel Lusky, t, Callington ..	0	3	6
20000 Wheel Owies, t, St. Just ..	7	3	0
30000 Wh. Silver & Lanteglos, * s-i, Camelf. ..	1	0	0
8000 Wheel Sisters, t, Lelant ..	4	2	6
40000 Wheel St. John, t, Redruth ..	18	6	0
80000 Yealand Consols, t, Devonshire ..	0	12	6
4000 Ystwith, * i, Cardigan ..	1	0	0

bl, blende; *c*, copper; *g*, gold; *l*, lead; *s*, silver; *sl*, slate
s-l, silver-lead; *t*, tin; *z*, zinc; *i*, iron; *a*, arsenic.
 *Limited Liability Companies; † quoted on the St Exchange.
 ‡ have paid dividends.

IRON AND COAL COMPANIES.

Shares.	Company.	Fund.	Price.
2100	Abbot, John, and Co. [L].....	£ 75 0	45 47½
5	Altamti Colliery Co. [L].....	5 0	
100	Asbury Co. [L] (new).....	90 0	30 31
3	Bagnall, John, and Sons [L]....	3 0	
10	Benhar Coal Co. [L].....	10 0	
100	Bilbao River & Cantabrian R.R. Co. 100 0		5½ 6
20	Bolokov, Vaughan, and Co. [L] A 12	12 0	10½ 10½
50	Brown, Bailey, and Dixon [L] 40	2 0	
100	Brown, John, and Co. [L].....	75 0	60 62½
100	Camell and Co. [L].....	80 0	68½ 69½
20	Cannock & Huntingdon Coal [L] 10	0 0	10½ 10
10	Central Swedish Iron & Stl. [L] 10	0 0	
50	Charlton Iron Co. [L].....	50 0	
50	Chatterley Iron Co. [L].....	50 0	6½ 6½
10	Challington Iron Co. [L].....	10 0	¾ ¾
10	Consett Iron Co. [L].....	7 1c	23 24
1	Consett Spanish Ore [L].....	1 c	23½ 23½
20	Darlington Iron Co. [L].....	13 10	¾ ¾
50	Davy Brothers [L].....	22 10	
23	Ebbw Vale Co. [L].....	20 0	6½ 6½
8	Genl. Mining Ass. [L] (ful. pd.)	8 0	6 6½
50	Knowles, Andrew, and Co. [L] 25	0 0	10 11
20	Llynvi and Tondul [L].....	20 0	3½ 3½
10	Lydney & Wigpool Iron Ore [L] 9	12 0	½ 1½
10	Miland Iron Co. [L].....	5 0	1½ 2
10	Moskleson & Co. [L].....	10 0	

GAS COMPANIES

<i>Issue, Shares,</i>		<i>Fl.</i>	<i>Clas. p.</i>
5000.. 20..	Bahia [L]	all..	23 34
51000.. 5..	Bombay [L]	all..	6 64
10000.. 8..	Brentford, New [L]	all..	4 56
29700.. 8..	Brentford, New [L]	all..	4 56
14000.. 20..	British	100..	195 200
50000.. 8..	Commercial	all..	25 26
20000.. 20..	Continental Union [L]	all..	31 32
20000.. 20..	Do. do. New, 1869, 1872	14..	215 225
10000.. 20..	Do. do. 7 per ct. Preference	all..	275 285
23400.. 10..	European	all..	19 20
94950.. 8..	Gaillard and	all..	187 192
242000.. 8..	Do. 4 per cent. Deb. Stock	all..	187 192
5000.. 10..	Hong Kong and China	all..	165 175
2900000.. 8..	Imperial Continental	all..	229 233
10000.. 5..	Malta & Mediterranean [L]	all..	25 3
100000.. 20..	Metrop. of Melbourne p.c. Deb.	all..	16 17
25000.. 20..	Monte Video [L]	all..	73 80
10000.. 5..	Ottoman [L]	all..	45 46
30000.. 5..	Oriental [L]	all..	73 80
27500.. 20..	Rio de Janeiro [L]	all..	245 255
570000.. 8..	S. Paulo Metropolitano, A.	all..	260 270
50000.. 8..	Ditto, ditto, B.	100..	228 229

TRAMWAYS.

Tons, Shares.			Pd. Clas. pr.
40000	5	Anglo-Argentine [L]	all 6% 0/8
10000	10	Barcelona [L]	all 5% 0/8
7140	10	Belfast Street Tramways	all 7% 0/8
3000	10	Birkenhead, Ordinary	all 1 1/2
3000	10	Bristol [L per cent. Preference.	all 4
9230	10	Bordeaux Tram & Omnibus [L]	all 6 7/8
25000	10	Chester [L]	all 8 1/2
3200	10	Dublin	all 8 9
24000	10	Dunfermline Street Tramways	all 9 1/2
14630	10	Glasgow Tramway & Omn. [L]	all 9 15% 10/8
35000	10	Hughes Loco. and Tram. works. all	all 9% 0/8
10000	10	Imperial [L]	all 3% 1/2
7500	10	Liverpool Traction Tram & Om. [L]	all 6% 1/2
34000	10	London [L]	all 15% 10/8
25000	10	London Street Tramways	all 17 17% 1/8
15000	10	North Metropolitan	all 8% 0/8
40000	10	Nottingham and District [L]	all 7% 7/8
8000	10	Provincial [L]	all 3 4
15947	10	Sheffield	all 4% 5/8
6000	10	Southampton	all 2% 3/8
5000	10	Sunderland [L]	all 5% 2 1/2
10000	10	Tramways [L]	all 5% 2 1/2
12000	10	Tramways of Germany [L]	all 10% 11 1/2
16500	10	Tramways and Gen. Works [L]	all 1% 8
40000	5	Tramways Union [L]	all 3 3/8
25000	10	Vale of Clyde	all 2% 4
7200	10	Wolverhampton [L]	all 2% 4

BANKS.

<i>Issue, Shares</i>		<i>Pd.</i>	<i>Clos. pr.</i>
100000	10 Agria [L]	all	94 9/8
80000	20 Anglo-Egyptian Banking [L]	all	19 20
30000	40 Bank of Australasia	all	84 88
12500	50 Bank of British Columbia	all	22 1/2 23 1/2
50000	50 Bank of British North America	all	55 57
10000	50 Bank of Egypt	all	26 28
50000	20 Bank of New Zealand	all	67 69
100000	20 Bank of New Zealand	all	47 1/2 48 1/2
25000	25 Bank of South Australia	all	43 1/2 44 1/2
120000	50 Bank of Victoria	25	37 39
40000	20 Chartd. of Ind., Aust., & China, all	22	23
30000	25 Ch. Merc. of Ind., Lond., China, all	16	17
80000	100 Colonial	36	71 73
80000	20 English Bk. of Rio de Janeiro [L]	16	13 1/2 14 1/2
80000	20 London & River Plate [L]	10	13 14
80000	7 London and San Francisco [L]	all	13 14
150000	10 London Chartered of Australia	all	24 1/2 25 1/2
100000	10 National Bank of N. Zealand [L]	34	34 35
80000	25 Oriental Bank Corporation	all	10 1/2 11 1/2
12500	10 Queensland National [L]	5	11 1/2 11 3/4
40000	100 Standd. of South Africa [L]	25	48 47

TELEGRAPH COMPANIES.

<i>No.</i>	<i>Name</i>	<i>Pd.</i>	<i>Clos. pr.</i>
Stk.	Anglo-American	100	0 43½ 44½
10	Brazilian Submarine	10	0 98 99½
10	Cuba	10	0 106 107
10	Spanish Cable	10	0 51 52
20	Direct United States Cable	20	0 10½ 11½
10	Eastern	10	0 106 111
10	East, Exten. Austr. and China	10	0 119 117½
10	German Union	10	0 119 120
10	Nat'l Northern of Copenhagen	10	0 127 129
25	Indo-European	25	0 31 32
10	London Platino Brazilian	10	0 86 4

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